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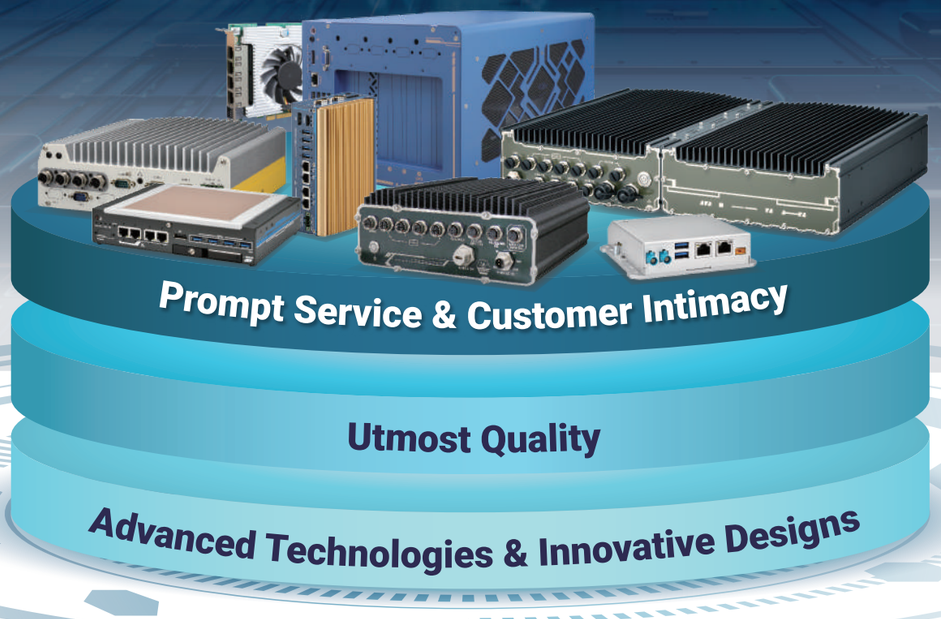
NEOUSYS TECHNOLOGY

Ever Expanding Edge AI Boundaries

Wide-temperature Fanless Embedded Systems

www.neousys-tech.com

Accelerating Industrial AI with Leading Edge Embedded Platforms



Core competence

Neousys Technology designs and manufactures industrial computers and rugged GPU computing platform to expand AI boundaries. Featuring exclusive mechanical and thermal design, our products integrate field-proven fanless thermal solution with simple and yet robust architectures.
Our dedication to innovate and integrate practical application-oriented functions set us apart from the rest and our products are ideal solutions for automation, machine vision, transportation, GPU computing, surveillance and video analytics.

NEOUSYS TECHNOLOGY

About Neousys Technology

Established in 2010, Neousys Technology designs, manufactures, and markets innovative edge AI computing platforms and rugged embedded computers.

We specialize in the thermal management and integration of high-computation-power CPUs and GPUs. Our proficiency in specialized I/O connectivity allows us to utilize various cameras and sensors to meet diverse application needs.

Committed to lead the future of automation and intelligentization across industries, Neousys Technology stands out with high-performance and application-oriented product designs to lay the foundation for an intelligent, connected world, and advancing edge AI.

Neousys Technology offers application-oriented platforms in the following categories:

- Rugged embedded wide temperature industrial computers
- Edge AI GPU computing platforms
- IP69K/67/66 waterproof computers
- Fanless in-vehicle computers
- Ultra compact fanless computers
- Machine vision platform with multiple GigE/ PoE ports
- Surveillance/video analytics computers
- Industrial SuperCAP power backup modules

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In-vehicle Computing

Railway Computer

Machine Vision

Surveillance/ Video Analytics

GPU Computing

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Product Highlight

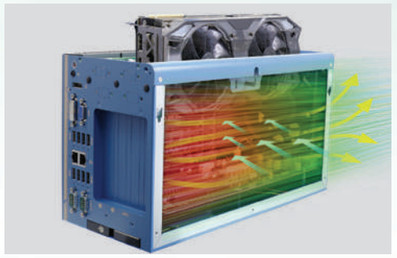
Ahead of the Curve - Industrial Edge AI GPU Computing Platform

Based in Taiwan, Neousys Technology is a global leading manufacturer and provider of industrial edge AI GPU computing platforms.
With Expertise in industrial embedded systems and edge AI applications, Neousys continues to innovate and create patented technologies to be incorporated into industrial solutions. Designing and manufacturing industrial-grade rugged embedded systems and modules for over a decade, Neousys offers the most reliable and innovative embedded solutions on the market.
As one of the pioneers in industrial GPU computing, Neousys offers industry-leading edge AI platforms. With support for NVIDIA® Tensor Core GPUs, RTX professional series and mainstream dual/ single RTX graphics cards configuration, power-efficient Jetson™ and Google TPUs, Neousys platforms can satisfy a variety of edge AI workloads from volatile environments to demanding factory conditions.
Currently an NVIDIA® Jetson™ ecosystem partner, Tesla-Qualified Server, the sole collaborating IPC hardware vendor for Baidu Apollo 2.0 and a trusted partner around the globe in various vertical markets, you can find Neousys Technology industrial edge AI GPU computing platforms in manufacturing, intelligent transportation, marine, medical, agriculture, autonomous aerial, autonomous ground vehicles and more.

Why Choose Neousys ?

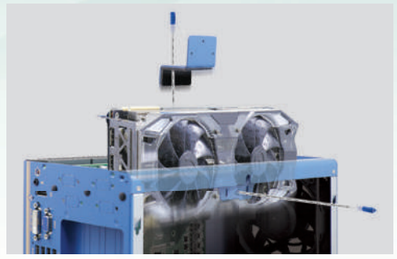
Complete GPU Support

Ranging from Jetson Orin™, mainstream RTX, Tensor Core GPUs to RTX professional graphics cards for power-efficient or high-performance applications.



Patented Thermal Design

Offering better heat distribution and dissipation for optimal performance to prevent CPU/ GPU from throttling.



Adaptive GPU Bracket

The patented adaptive GPU bracket ensures installed graphics cards are always secured in position to withstand shock and vibration.

Patented Damping Bracket

The patented damping bracket effectively absorbs shock and vibration up to 3Grms for reliable and stable operations.

Multi-GPUs via Single Wide-range DC Input

Accepting a wide range DC input from 8V to 48V, and requires only a single source of power input to sustain operation for dual high end RTX GPU cards.

Ignition Power Control

Built-in ignition control to safely shutdown and startup the system.

Rich I/Os with Screw-lock Mechanism

Available with an abundance of I/Os and screw-lock mechanism for reinforced connections.

Expansion Capability

PCIe/ PCI add-on slots allow for connectivity or functionality expansion.

Product Highlight

Robust AI-Powered Vision from Roadside to In-vehicle

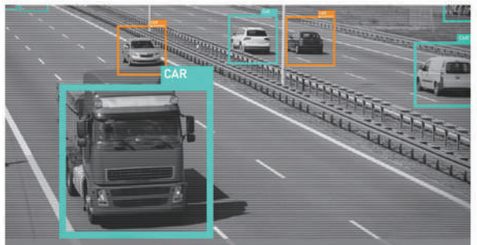
NVIDIA Preferred Partner

Environmental challenges come into play when deploying systems into the field, challenges such as temperature, dust, vibration, etc. When you throw in other field limitations like unstable power, need for ignition power control in a vehicle, insufficient connectivity/ function/ installation space, etc. These are what users encounter on a daily basis, and can slow down project developments. For a system to operate stably and reliably in the field, a lot of extra resources are spent, time to design, development and tests are done behind the scenes.

Neousys edge AI platforms powered by NVIDIA® Jetson system-on-module are fully integrated with Neousys DNA characteristics that are designed to thrive in harsh environments and operate in limited conditions. Neousys systems can easily be implemented into solutions and deployed into the field, saving cost, additional testing and development time.

By supporting various camera interfaces, the platform enables significant AI performance and vision capability for AI-based video analytics or pre-processing applications in vehicles, roadside or robotics.

Edge Inspection



Roadside IVA

Autonomous Mobile Robots

In-vehicle IVA & ADAS

Ready for Deployment

Rugged, Fanless and Waterproof

Unique and efficient thermal design capable of operating from -40°C and up to 70°C in fanless conditions. Furthermore, the AWP series are waterproof and dustproof for extreme environment deployments.

Versatile Camera Support

Compatible with PoE/ USB3/ GMSL interfaces to support IP, GigE, PTZ, GMSL, and GMSL2 cameras for different vision-based applications that require image acquisition, and low latency in dynamic lighting conditions.

Efficient and Powerful AI

Offers significant AI inference performance up to 275 TOPS while consuming minimum power. This efficiency allows longer battery operating time in AGV/ AMR applications.

Diverse Application Form Factors

We design unique application-driven products that can add-on AI capability to existing x86 PCs. Products such as AI frame grabber, flattop heatsink computer in cabinet, or mission computer on drone, etc.

Ready for In-vehicle/ Mobile Deployments

Featuring damping brackets, screw-lock mechanism, wide-range DC input, ignition control, CAN bus, and wireless module for communication, NRU series is designed to operate reliably in in-vehicle conditions.

Harnessing AI in the Most Challenging Edge Environments

With the popularity of edge AI deployments in recent years, embedded systems deployed at the edge are usually positioned in harsh environments, such as mining trucks, agricultural machinery, military unmanned vehicles, maritime, waste or food production lines. This means that extremely rugged computing systems are required, capable of providing powerful AI computation for data and image processing while operating stably in high or low temperatures, corrosive environments, water-cleaning situations, or in-vehicle conditions. Neousys' rugged waterproof series computers are designed specifically for these extreme edge AI applications. With ratings from IP66 to IP69K, these computers feature powerful processing capabilities with advanced thermal management. Enclosed in a reinforced stainless-steel chassis, its M12 connectors can ensure uninterrupted operation in extreme temperatures ranging from -40°C to 70°C.

Evolution Through Innovation

Featuring corrosion-proof stainless steel and aluminum chassis, our computers are built air-tight to withstand moisture, salinity, and other environmental contaminants.

Supporting -40°C to 70°C wide-temperature operation and complies with stringent MIL-STD-810H shock and vibration standards to ensure reliable operation.

Powered by Intel® processors or NVIDIA® Jetson modules, the systems deliver high-performance AI computation for diverse customer needs.

Providing PoE+ GbE, 2.5GbE, 10GbE, USB3, and GMSL2 ports via durable M12 connectors for diverse sensor integration.

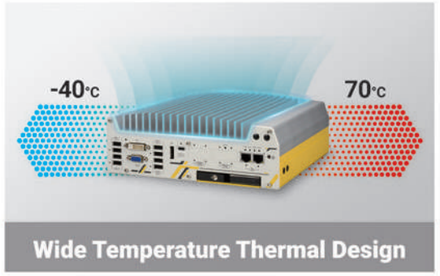
Equipped with 8V to 48V DC input with built-in ignition power control, RS-232/ 485, CAN bus and mini-PCIe for wireless communication expansion.

Product Highlight

Ready to Enhance On-road Reliability?

In the bustling world of transportation, where every journey is a testament to resilience, Neousys' VTC series stands as a beacon of rugged reliability. Designed to brave the harshest environments—be it the relentless vibrations of a freight truck, the constant motion of a city bus, or the demanding conditions of a train—the VTC series combines innovation with endurance. Its patented heat dissipation technology and shock-resistant design ensure that it thrives where others falter. Certified to meet the rigorous standards of E-Mark certification and EN 50155 EMC compliance, it not only promises durability but also excels in connectivity with its extensive array of I/O ports. Whether navigating urban streets or the open road, the VTC series is the steadfast companion that keeps every vehicle's heart beating smoothly and efficiently.

Driving Transformation Through Innovation



Wide Temperature Thermal Design

A patented passive cooling design ensures fanless operation from -40°C to 70°C , even at full CPU load

Rugged Reliability On The Road

Certified with E-Mark certification and EN 50155 EMC compliance, the system ensures safety and reliability in harsh mobile environments, offering shock and vibration resistance.

Efficient And Powerful Performance

Featuring high-performance CPU, ensuring robust processing power for demanding applications and real-time decision-making

Ready For In-vehicle Application

With PoE+ ports, screw-locks, wide DC input, ignition control, SocketCAN, and wireless modules, the VTC series ensures reliable in-vehicle operation.

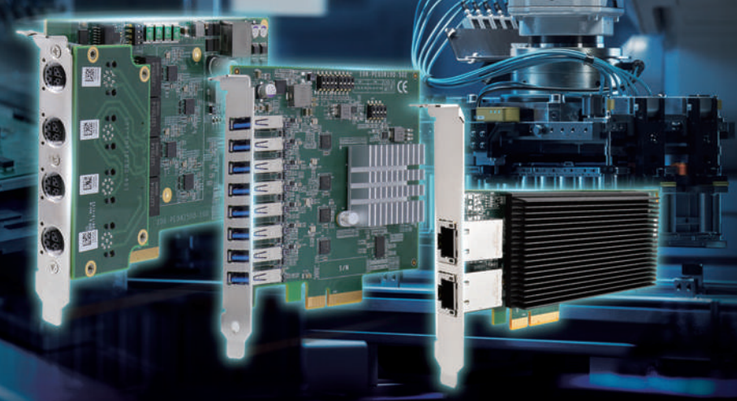
All specifications design are subject to change without prior notice. Please visit Neousys website for more details.

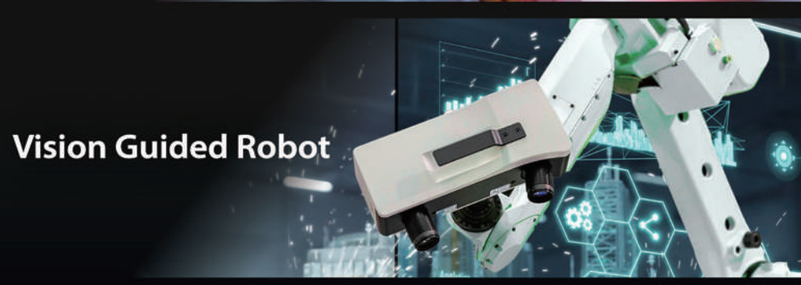
Product Highlight

Precision in Motion: Elevate Your Vision Applications

Neousys frame grabber cards support high-definition resolution and rapid frame rates for high-speed vision applications. Offering excellent operating compatibility and reliability, they are available in 1G, 2.5G, 5G, and 10G variants while supporting GigE, 5GigE, 10GigE, and USB3 cameras. With independent controllers for smooth data transfer, PoE+ support, and rugged RJ45 and M12 connectors, these cards excel in machine vision and surveillance, delivering precision and speed in demanding industrial environments.

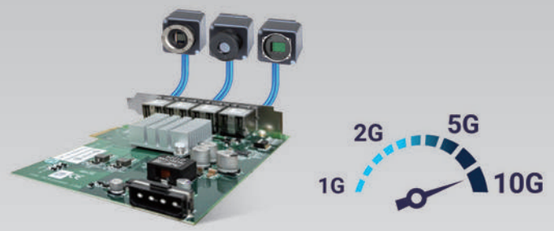
High Bandwidth Support | Wide-temp operation | PoE+ support | M12 connectors





High Bandwidth Support

- Available in 1G, 2.5G, 5G, and 10G variants
- Support High-resolution and high-speed cameras



Low Latency & High Throughput

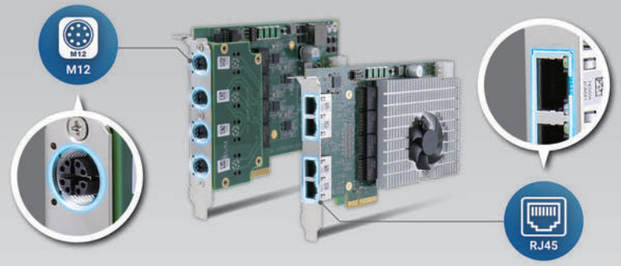
- Independent controller ensure maximum per-port performance
- Sustaining data transfer even with multiple devices connected

PoE+ Capability

- Feature programmable API software for power on/off control
- Powers devices via Ethernet, eliminating the need for separate power supplies

Robust Connector

- Industrial RJ45 connectors ensure flexible and efficient connectivity in conventional setups
- Rugged M12 X-coded connectors provide robust stability for high-demand environments

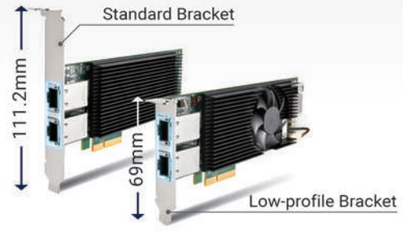


Add-on Connectivity

- Leverage PCIe slots to effortlessly expand system connectivity and enhance functionality
- Designed to fit diverse systems, ensuring reliable performance for industrial and specialized environments

Seamless Integration and Innovative Design

- Low-Profile with x4 slots requirement for flexibility in compact systems
- Ensure reliable and continuous operation with original platform



Product Highlight

HPC at the EDGE?

As industrial applications migrate from automation to autonomy, the demand for processing power has increased dramatically. However, the realm of high-performance computing (HPC) has always been reserved for large-size servers in air-conditioned rooms.

Is it possible to deploy an HPC to the edge? Limited by an HPC's heat production an dissipation needs, size restrictions, power supply requirements, such feat has not been possible in the past. But with Neousys RGS, things are about to change!

Wide Temp.

Segregated compartment for -25°C to 60°C operations

Compact Dimension

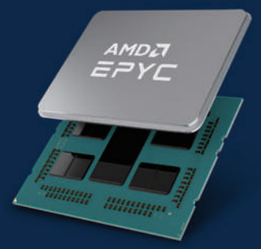
2U form factor conformity but only 350mm (13.78") deep

Sturdy Construction

Rugged construction with dedicated brackets and component holders

Powered by AMD® EPYC™ 7003 Series

Powered by AMD® EPYC™ 7003 series "MILAN" processor with up to 64-core/ 128-thread, and supports up to 512GB registered memory



Supports NVIDIA® RTX A6000/ A4500

Supports an NVIDIA® RTX A6000 or A4500 GPU that provides up to 38.7 TFLOPS FP32 or 309.7 TFLOPS tensor performance

2U 19" Dimensions but Only 350mm Deep

The compact dimension and server-comparable performance are perfect for autonomy applications

Rugged -25°C to 60°C Wide-temperature Operation

Uniquely partitioned compartments with extremely effective airflow to the CPU, GPU, and add-on cards for reliable operations

Rich I/O Connectivity

Two 10G Ethernet ports for high-speed data transmission; four Gigabit PoE+ and four USB 3.1 Gen1 ports for camera connectivity

Wide-range DC & Patented Design

Wide-range DC input, shock/ vibration damping bracket, screw-lock mechanism, and more

Product

Selection Guide




Product Lines		Rugged Embedded			
Model Name		Nuvo-11000E/ DE/ LP	Nuvo-11531/11588	Nuvo-9000E/ P/ DE	Nuvo-9000LP
Chassis	Dimensions (W x D x H)	240 x 225 x 90 mm (Nuvo-11000E) 240 x 225 x 110.5 mm (Nuvo-11000LP) 240 x 225 x 110.5 mm (Nuvo-11000DE)	212 x 165 x 63 mm	240 x 225 x 90 mm (Nuvo-9000E/ P) 240 x 225 x 110.5 mm (Nuvo-9000DE)	240 x 225 x 79 mm
	Weight	3.58 kg (Nuvo-11000E) 3.36 kg (Nuvo-11000LP) 3.89 kg (Nuvo-11000DE)	2.22 kg	3.58 kg (Nuvo-9000E/P) 3.89 (Nuvo-9000DE)	3.36 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® Core™ Ultra 200 series CPU	Intel® Core™ Ultra 200 series CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™ CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™ CPU
	Chipset	Intel® H810/ Q870	Intel® H810 (Nuvo-11531) Intel® Q870 (Nuvo-11588)	Intel® Q670E	Intel® Q670E
	Graphics	Intel® Xe LPG Graphics	Intel® Xe Graphics (Up tp 64EU)	Intel® UHD Graphics 770/ 730	Intel® UHD Graphics 770/ 730
	Acceleration GPU	-	-	-	-
	Memory	Up to 96 GB DDR5 6400	Up to 64 GB DDR5 4800	Up to 64 GB DDR5 4800	Up to 64 GB DDR5 4800
I/O Interface	PoE	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)
	Ethernet	1x 2.5GbE (I226-IT) and 1x GbE (I219-LM) (Nuvo-11002E/ LP) 5x 2.5GbE (I226-IT) and 1x GbE (I219-LM) (Nuvo-11006E/ DE/ LP) 1x Optional 10GbE (Nuvo-11006E/DE/LP)	4x 2.5GbE (I226)	1x 2.5GbE (I225) and 1x GbE (I219) (Nuvo-9002E/ P/ DE) 5x 2.5GbE (I225) and 1x GbE (I219) (Nuvo-9006E/ P/ DE)	1x 2.5GbE (I225) and 1x GbE (I219) (Nuvo-9002LP) 5x 2.5GbE (I225) and 1x GbE (I219) (Nuvo-9006LP)
	CAN bus	-	-	-	-
	Video Port	1x HDMI™ 1x DisplayPort	1x HDMI™ 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort
	Serial Port	2x RS-232/422/485 2x 3-wire RS-232	1x RS-232/422/485 3x 3-wire RS-232 or 1x RS422/ 485	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 2x RS-232
	USB 2.0	4 (Nuvo-11002E/ LP)	2	2	2
	USB 3.2/ USB 3.1	8x USB 3.2 Gen2(Nuvo-11006E/ DE/ LP) 2x USB3.2 Gen2 and 2x USB3.2 Gen1 (Nuvo-11002E/ LP)	4x USB3.2 Gen1	7 (incl. 1x 20Gbps type-C)	7 (incl. 1x 20Gbps type-C)
	Audio	1x mic-in and speaker-out	-	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	4DI + 4DO	4DI + 4DO (Nuvo-11531) 8DI + 8DO (Nuvo-11588)	Optional via MezIO® module	Optional via MezIO® module
Storage Interface	SATA HDD	2x 2.5" HDD/ SSD (Nuvo-11000E/ DE) 1x hot-swap tray for 2.5" HDD/ SSD and 1x internal 2.5"SATA port (Nuvo-11000LP)	1x front-accessible HDD tray for 2.5" HDD/ SSD	2x 2.5" HDD/ SSD	1x hot-swap tray for 2.5" HDD/ SSD and 1x internal 2.5"SATA port
	mSATA	-	-	-	-
	M.2 (M-key)	1 (Gen5 x4)	1 (Gen4 x4)	1 (Gen4 x4)	1 (Gen4 x4)
Expansion Bus	Mini PCI-E	2	2	1	1
	M.2 (B-key/E-key)	-	1x M.2 E-key	1x M.2 B-key	1x M.2 B-key
	SIM	2	2	2	2
	MezIO®	Yes	-	Yes	Yes
	PCI/PCI Express	1x PCIe x16 slot @ Gen4, 16-lanes PCIe signals in Cassette (Nuvo-11002E/11006E) 2x PCIe x16 slots @ Gen4, 8-lanes PCIe signals in Cassette (Nuvo-11006DE)	-	1x PCIe x16 slot @ Gen3, 8-lanes PCIe signals in Cassette (Nuvo-9000E) 1x PCI slot in Cassette (Nuvo-9000P) 2x PCIe x16 slots @ Gen3, 8-lanes PCIe signals in Cassette (Nuvo-9000DE)	-
Power Supply	DC Input	8V to 48V DC	8V to 48V DC	8V to 48V DC	8V to 48V DC
	Ignition Control	Optional via MezIO® module	Built-in	Optional via MezIO® module	Optional via MezIO® module
Environmental	Operating Temperature	**with 35W CPU** -25°C to 70°C **with >= 65W CPU** -25°C to 70°C (configured as 35W TDP mode) -25°C to 50°C (configured as 65W TDP mode)	**with 35W CPU** -25°C to 60°C **with >= 65W CPU** -25°C to 60°C	**with 35W CPU** -25°C to 70°C **with >= 65W CPU** -25°C to 70°C (configured as 35W TDP mode) -25°C to 50°C (configured as 65W TDP mode)	**with 35W CPU** -25°C to 70°C **with >= 65W CPU** -25°C to 70°C (configured as 35W TDP mode) -25°C to 50°C (configured as 65W TDP mode)
	Certification	CE/ FCC	CE/ FCC	CE/ FCC, UL623868-1	CE/ FCC
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Product Lines		Rugged Embedded			
Model Name		Nuvo-9531	Nuvo-9531-FT	Nuvo-9501	Nuvo-9650AWP
Chassis	Dimensions (W x D x H)	212x 165 x 63 mm	212x 165 x 45 mm	212 x 165 x 80 mm	225 x 286 x 90 mm
	Weight	2.5 kg	2.4 kg	2.5 kg	5.25 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU
	Chipset	Intel® H610E	Intel® H610E	Intel® H610E	Intel® H610E
	Graphics	Intel® UHD Graphics 770/ 730	Intel® UHD Graphics 770/ 730	Intel® UHD Graphics 770/ 730	Intel® UHD Graphics 770/ 730
	Acceleration GPU	-	-	-	-
	Memory	Up to 32 GB DDR4 3200	Up to 32 GB DDR4 3200	Up to 32 GB DDR4 3200	Up to 96 GB DDR5 4800
I/O Interface	PoE	Optional (Port 1 to 4, IEEE 802.3at, 25.5W)	Optional (Port 1 to 4, IEEE 802.3at, 25.5W)	-	Optional (IEEE 802.3at PoE+ PSE, 25.5W)
	Ethernet	4x 2.5GbE by Intel® I226-IT	4x 2.5GbE by Intel® I226-IT	2x 2.5GbE by Intel® I226-V (Nuvo-9501) 2x 2.5GbE by Intel® I226-IT (Nuvo-9505D)	1x GbE by Intel® I219-LM (M12 X-coded) 3x 2.5GbE by Intel®Intel I226-IT (M12 X-coded)
	Video Port	1x VGA 1x DisplayPort	1x VGA 1x DisplayPort	1x VGA 1x DisplayPort	1x VGA 1x DisplayPort in Type-C 1x reserved DisplayPort
	Serial Port	1x RS-232/422/485 3x 3-wire RS-232 or 1x RS-422/485	1x RS-232/422/485 3x 3-wire RS-232 or 1x RS-422/485	1x RS-232/422/485 3x 3-wire RS-232 or 1x RS-422/485	1x isolated RS-232/422/485 1x isolated RS-422/485 via M12 A-coded
	USB 2.0	2	2	2	3
	USB 3.2/ USB 3.1	4	4	4	2
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	-
	Digital I/O	4DI +4DO	4DI +4DO	4DI +4DO (Nuvo-9505D only)	-
Storage Interface	SATA HDD	1x hot-swap tray for 2.5" HDD/ SSD	1x hot-swap tray for 2.5" HDD/ SSD	1x 2.5" HDD/ SSD or 1x 3.5" HDD	2x internal SATA port for 2.5" HDD/ SSD
	mSATA	-	-	-	-
	M.2 (M-key)	1 (Gen4 x4)	1 (Gen4 x4)	1 (Gen4 x4)	1 (Gen4 x4)
Expansion Bus	Mini PCI-E	2	2	2	2
	M.2 (B-key/E-key)	1x M.2 E-key	1x M.2 E-key	1x M.2 E-key	1x M.2 B-key
	SIM	2	2	2	2
	MezIO®	-	-	-	-
	PCI/PCI Express	-	-	-	-
Power Supply	DC Input	8V to 48V DC	8V to 48V DC	8V to 35V DC	8V to 48V DC (Nuvo-9650AWP: M12 A-code / Nuvo-9650AWP-PoE: M12 L-coded)
	Ignition Control	-	-	-	Built-in
Environmental	Operating Temperature	**with 35W CPU** -25°C to 60°C **with 65W CPU (optional fan kit)** -25°C to 60°C	**with 35W CPU** -25°C to 60°C **with 65W CPU** -25°C to 60°C (configured as 35W TDP)	**with 35W CPU** -10°C to 60°C (Nuvo-9501) -25°C to 60°C (Nuvo-9505D) **with 65W CPU (optional fan kit)** -10°C to 60°C (Nuvo-9501) -25°C to 60°C (Nuvo-9505D)	**with 35W CPU** -25°C to 70°C **with >= 65W CPU** -25°C to 70°C (configured as 35W TDP mode) -25°C to 50°C (configured as 65W TDP mode)
	Certification	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC
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	Product Lines	Rugged Embedded			
	Model Name	**Nuvo-7000E/P/DE**	**Nuvo-7000LP**	**Nuvo-7531**	**Nuvo-7501**
Chassis	**Dimensions (W x D x H)**	240 x 225 x 90 mm (Nuvo-7000E/ P) 240 x 225 x 110.5 mm (Nuvo-7000DE)	240 x 225 x 79 mm	212 x 165 x 63 mm	212 x 173 x 76 mm
	Weight	3.6 kg (Nuvo-7000E/P) 3.7 kg (Nuvo-7000DE)	3.1 kg	2.5 kg	2.7 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	**Processor**	Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3, Pentium® and Celeron®	Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3, Pentium® and Celeron®	Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3, Pentium® and Celeron®	Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3, Pentium® and Celeron®
	Chipset	Intel® Q370	Intel® Q370	Intel® H310	Intel® H310
	Graphics	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630
	Acceleration GPU	-	-	-	-
	Memory	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400	Up to 32 GB DDR4-2666/ 2400	Up to 32 GB DDR4-2666/ 2400
I/O Interface	**PoE**	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	-	-
	Ethernet	2x GbE by Intel® I219 and I210 (Nuvo-7002E/ P/ DE) 6x GbE by Intel® I219 and I210 (Nuvo-7006E/ P/ DE)	2x GbE by Intel® I219 and I210 (Nuvo-7002LP) 6x GbE by Intel® I219 and I210 (Nuvo-7006LP)	4x GbE by Intel® I219 and I210	2x GbE by Intel® I219 and I210
	CAN bus	-	-	-	-
	Video Port	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x DVI-I 1x DisplayPort	1x VGA 1x DVI-D
	Serial Port	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 (COM1/ COM2)	2x RS-232/422/485 (Nuvo-7501) 2x RS-232 (Nuvo-7501) 2x isolate RS-232/422/485 (Nuvo-7505D) 2x isolate RS-232 (Nuvo-7505D) 2x RS-232 (Nuvo-7505D)
	USB 2.0	1 (internal)	1 (internal)	2	1 (internal)
	USB 3.2/ USB 3.1	8	8	4	4
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	Optional via MezIO® module	Optional via MezIO® module	4 DI + 4 DO	8 DI + 8 DO (Nuvo-7505D)
Storage Interface	**SATA HDD**	2x 2.5" HDD/ SSD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD	1x hot-swap tray for 2.5" HDD/ SSD	1x 2.5" HDD/ SSD or 1x 3.5" HDD
	mSATA	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)	-	-
	M.2 (M-key)	1	1	1	1
Expansion Bus	**Mini PCI-E**	1	1	3	1
	M.2 (B-key/E-key)	1x M.2 B-key	1x M.2 B-key	-	1x M.2 B-key
	SIM	3	3	3	1
	MezIO®	Yes	Yes	-	-
	PCI/PCI Express	1x PCIe x16 slot @ Gen3, 8-lanes PCIe signals in Cassette (Nuvo-7000E) 1x PCI slot in Cassette (Nuvo-7000P) 2x PCIe x16 slots @ Gen3, 8-lanes PCIe signals in Cassette (Nuvo-7000DE)	-	-	-
Power Supply	**DC Input**	8V to 35V DC	8V to 35V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	Optional via MezIO® module	Optional via MezIO® module	Optional	-
Environmental	**Operating Temperature**	with 35W CPU -25°C to 70°C with 65W CPU -25°C to 50°C	with 35W CPU -25°C to 70°C with 65W CPU -25°C to 50°C	-25°C to 60°C	-25°C to 60°C
	Certification	CE/ FCC, UL62368-1	CE/ FCC	CE/ FCC	CE/ FCC
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	Product Lines	Rugged Embedded			
	Model Name	**Nuvo-5000E/ P**	**Nuvo-5000LP**	**Nuvo-5026E**	**Nuvo-5501**
Chassis	**Dimensions (W x D x H)**	240 x 225 x 90 mm	240 x 225 x 77 mm	240 x 225 x 111 mm	221 x 173 x 76.2 mm
	Weight	3.6 kg	3.1 kg	3.7 kg	2.8 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	**Processor**	Intel® Core™ i7-6700/ 6700TE Intel® Core™ i5-6500/ 6500TE Intel® Core™ i3-6100/ 6100TE Intel® Pentium® G4400/ G4400TE Intel® Celeron® G3900/ G3900TE	Intel® Core™ i7-6700/ 6700TE Intel® Core™ i5-6500/ 6500TE Intel® Core™ i3-6100/ 6100TE Intel® Pentium® G4400/ G4400TE Intel® Celeron® G3900/ G3900TE	Intel® Core™ i7-6700/ 6700TE Intel® Core™ i5-6500/ 6500TE Intel® Core™ i3-6100/ 6100TE Intel® Pentium® G4400/ G4400TE Intel® Celeron® G3900/ G3900TE	Intel® Core™ i7-6700TE Intel® Core™ i5-6500TE Intel® Core™ i3-6100TE Intel® Pentium® G4400TE Intel® Celeron® G3900TE
	Chipset	Intel® Q170	Intel® Q170	Intel® Q170	Intel® H110
	Graphics	Intel® HD Graphics 530/ 510	Intel® HD Graphics 530/ 510	Intel® HD Graphics 530/ 510	Intel® HD Graphics 530/ 510
	Acceleration GPU	-	-	-	-
	Memory	Up to 32 GB DDR4-2133	Up to 32 GB DDR4-2133	Up to 32 GB DDR4-2133	Up to 16 GB DDR4-2133
I/O Interface	**PoE**	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	-
	Ethernet	2x GbE by Intel® I219 and I210 (Nuvo-5002E/ P) 6x GbE by Intel® I219 and I210 (Nuvo-5006E/ P)	2x GbE by Intel® I219 and I210 (Nuvo-5002LP) 6x GbE by Intel® I219 and I210 (Nuvo-5006LP)	6x GbE by Intel® I219 and I210	3x GbE by Intel® I219 and I210
	CAN bus	-	-	-	-
	Video Port	1x VGA 1x DVI-D 2x DisplayPort	1x VGA 1x DVI-D 2x DisplayPort	1x VGA 1x DVI-D 2x DisplayPort	1x VGA 1x DVI-D
	Serial Port	2x RS-232/422/485 1x RS-232	2x RS-232/422/485 1x RS-232	2x RS-232/422/485 1x RS-232	2x RS-232/422/485 2x RS-232
	USB 2.0	4	4	4	2
	USB 3.2/ USB 3.1	4	4	4	4
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	-
	Digital I/O	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module	Optional 8 DI + 8 DO
Storage Interface	**SATA HDD**	2x 2.5" HDD/ SSD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD	2x 2.5" HDD/ SSD	1x 2.5" HDD/ SSD or 1x 3.5" HDD
	mSATA	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)	1
	M.2 (M-key)	-	-	-	-
Expansion Bus	**Mini PCI-E**	2	2	2	1
	M.2 (B-key/E-key)	-	-	-	1x M.2 B-key
	SIM	2	2	2	1
	MezIO®	Yes	Yes	Yes	-
	PCI/PCI Express	1x PCI slot in Cassette (Nuvo-5002P/5006P) 1x PCIe x16 slot @ Gen3, 8-lanes PCIE signals in Cassette (Nuvo-5002E/5006E)	-	2x PCIe x8 slot @ Gen3, 4-lanes PCIe signals in Cassette	-
Power Supply	**DC Input**	8V to 35V DC	8V to 35V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module	-
Environmental	**Operating Temperature**	with 35W CPU -25°C to 70°C with 65W/ 51W CPU -25°C to 50°C	with 35W CPU -25°C to 70°C with 65W/ 51W CPU -25°C to 50°C	with 35W CPU -25°C to 70°C with 65W/ 51W CPU -25°C to 50°C	-25°C to 70°C
	Certification	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC
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Product Lines		Rugged Embedded			
Model Name		Nuvo-2600	Nuvo-2700DS	Nuvo-2822	Nuvo-10034
Chassis	Dimensions (W x D x H)	205 x 155 x 86 mm	173 x 174 x 50mm	165 x 215 x 136mm	241 x 280 x 188 mm
	Weight	2.3 kg (Nuvo-2600E) 2.5 kg (Nuvo-2600J)	1.6 kg	2.3 kg	5.2 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® Elkhart Lake Atom® x6425E	AMD Ryzen™ Embedded V1605B CPU	Intel® Alder Lake N97 processor	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU
	Chipset	-	-	-	Intel® Q670E
	Graphics	Intel® UHD Graphics	Vega GPU with 8 compute units	Intel® UHD Graphics with 24EUs	Intel® UHD Graphics 770/ 730
	Acceleration GPU	-	-	-	Up to 115W GPU Card
	Memory	Up to 32 GB DDR4-3200	Up to 64 GB DDR4-2400	Up to 16 GB DDR5 4800	Up to 64 GB DDR5 4800
I/O Interface	PoE	IEEE 802.3at (25.5W) for 4GbE Ports	-	-	-
	Ethernet	4x GbE by Intel® I210	2x GbE by Intel® I210	2x GbE by Intel® I210-IT	1x 2.5GbE by Intel® I226-IT 1x GbE Intel® I219-LM
	CAN bus	-	-	-	-
	Video Port	1x DVI-I	4x DisplayPort	1x HDMI™ 1x DP++	1x HDMI™ 1x DisplayPort
	Serial Port	1x isolated RS-485 3x 3-wire RS-232 or 1x RS-422/485	2x RS-232 (COM1 in DB9, COM2 in RJ50)	2x RS-232/422/485 3x 3-wire RS-232	2x RS-232/422/485 3x 3-wire RS-232
	USB 2.0	2+1 (internal)	2	2	1(internal)
	USB 3.2/ USB 3.1	1	2	2	8
	Audio	1x mic-in and speaker-out	1x mic-in and line-out	-	1x mic-in and speaker-out
	Digital I/O	4 DI + 4 DO	Optional 4 DI + 4 DO	4 DI + 4 DO	-
Storage Interface	SATA HDD	1x front-accessible HDD tray for 2.5" HDD/ SSD	-	-	2x 2.5" HDD/ SSD
	mSATA	-	-	-	-
	M.2 (M-key)	1	1	1	1
Expansion Bus	Mini PCI-E	2	2	-	2
	M.2 (B-key/E-key)	1x M.2 B-key	1x M.2 B-key 1x M.2 E-key	-	-
	SIM	2	1	-	2
	MezIO®	-	-	-	-
	PCI/PCI Express	1x PCIe x4 slot @ Gen3, 2-lanes PCIe signals in Cassette (Nuvo-2600E only)	-	1x PCIe x4 slot @ Gen3, 4-lanes 1x PCIe x4 slot @ Gen3, 1-lanes 2x 33MHz/ 32-bit 5V PCI slots	2x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slot @ Gen3, 4-lanes 3x 33MHz/ 32-bit 5V PCI slots
Power Supply	DC Input	8V to 35V DC	8V to 35V DC	12V to 24V DC	12V to 35V DC
	Ignition Control	Optional	Built-in	-	-
Environmental	Operating Temperature	-25°C to 70°C	-25°C to 70°C	With FAN Kit -10°C ~ 70°C Without FAN Kit -10°C ~ 60°C	-25°C to 60°C
	Certification	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC
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Product Lines		Rugged Embedded			
Model Name		Nuvo-10007	Nuvo-10003	Nuvo-8034	Nuvo-8023
Chassis	Dimensions (W x D x H)	241 x 280 x 188 mm	212 x 173 x 76mm	259 x 280 x 198 mm	185 x 235x 174 mm
	Weight	5.2 kg	4.2 kg	7 kg	3.6 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™ CPU Intel® Pentium® Intel® Celeron®	Intel® Xeon® E-2176G/ E-2124G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Core™ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100TE/ i3-8100/ i3-8100T Intel® Pentium® G5400T Intel® Celeron® G4900T
	Chipset	Intel® Q670E	Intel® Q670E	Intel® C246	Intel® H310
	Graphics	Intel® UHD Graphics 770/ 730	Intel® UHD Graphics 770/ 730	Intel® HD Graphics 630, or x16 PEG port	Intel® HD Graphics 630, or x16 PEG port
	Acceleration GPU	Up to 115W GPU Card	Up to 115W GPU Card	Up to 180W GPU Card	Up to 125W GPU Card
	Memory	Up to 64 GB DDR5 4800	Up to 64 GB DDR5 4800	Up to 128 GB DDR4-2133	Up to 32 GB DDR4-2666
I/O Interface	PoE	-	-	-	-
	Ethernet	1x 2.5GbE by Intel® I226-IT 1x GbE Intel® I219-LM	1x 2.5GbE by Intel® I226-IT 1x GbE Intel® I219-LM	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210
	CAN bus	-	-	-	-
	Video Port	1x HDMI™ 1x DisplayPort	1x HDMI™ 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	2x DVI-D
	Serial Port	2x RS-232/422/485 3x 3-wire RS-232	2x RS-232/422/485 3x 3-wire RS-232	2x RS-232/422/485 2x RS-232 (optional)	1x RS-232/422/485 1x RS-422/485 3x 3-wire RS-232
	USB 2.0	1(internal)	1(internal)	1 (internal)	3 (internal)
	USB 3.2/ USB 3.1	8	8	8	4
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	-	-	8 DI + 8 DO	-
Storage Interface	SATA HDD	2x 2.5" HDD/ SSD	2x 2.5" HDD/ SSD	2x hot-swap tray for 2.5" HDD/ SSD	2x 2.5" HDD/ SSD
	mSATA	-	-	2 (mux. with mini-PCIe)	1 (SATA + USB 2.0 + USIM)
	M.2 (M-key)	1	1	1	1
Expansion Bus	Mini PCI-E	2	2	2	-
	M.2 (B-key/E-key)	-	-	1x M.2 B-key	-
	SIM	2	2	4	1
	MezIO®	-	-	-	-
	PCI/PCI Express	2x PCIe x16 slot @ Gen3, 8-lanes 3x PCIe x8 slot @ Gen3, 4-lanes 2x PCIe x4 slot @ Gen3, 2-lanes	1x PCIe x16 slot @Gen3, 16-lanes 2x PCIe x8 slot @ Gen3, 4-lanes	2x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slots @ Gen3, 4-lanes 3x 33MHz/ 32-bit 5V PCI slots	1x PCIe x16 slot @ Gen3, 16-lanes 1x PCIe x4 slot @ Gen2, 2-lanes 1x PCIe x4 slot @ Gen2, 1-lane 2x 33MHz/ 32-bit 5VPCI slots
Power Supply	DC Input	12V to 35V DC	12V to 35V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	-	-	-	-
Environmental	Operating Temperature	-25°C to 60°C	-25°C to 60°C	-25°C to 60°C	-25°C to 60°C
	Certification	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC
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	Product Lines	Rugged Embedded			
	Model Name	**Nuvo-8032**	**Nuvo-8041**	**Nuvo-8003**	**Nuvo-8111**
Chassis	**Dimensions (W x D x H)**	185 x 235x 174 mm	185 x 235 x 174 mm	154 x 235 x 174 mm	174 x 330x 174 mm
Chassis	**Weight**	3.6 kg	3.6 kg	3 kg	4.5 kg
Chassis	**Chassis Construction**	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	**Processor**	Intel® Core™ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100TE/ i3-8100/ i3-8100T Intel® Pentium® G5400T Intel® Celeron® G4900T	Intel® Core™ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100TE/ i3-8100/ i3-8100T Intel® Pentium® G5400T Intel® Celeron® G4900T	Intel® Core™ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100TE/ i3-8100/ i3-8100T Intel® Pentium® G5400T Intel® Celeron® G4900T	Intel® Core™ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100TE/ i3-8100/ i3-8100T Intel® Pentium® G5400T Intel® Celeron® G4900T
System	**Chipset**	Intel® H310	Intel® H310	Intel® H310	Intel® H310
System	**Graphics**	Intel® HD Graphics 630, or x16 PEG port	Intel® HD Graphics 630, or x16 PEG port	Intel® HD Graphics 630, or x16 PEG port	Intel® HD Graphics 630, or x16 PEG port
System	**Acceleration GPU**	Up to 125W GPU Card	Up to 125W GPU Card	Up to 125W GPU Card	Up to 200W GPU Card
System	**Memory**	Up to 32 GB DDR4-2666	Up to 32 GB DDR4-2666	Up to 32 GB DDR4-2666	Up to 32 GB DDR4-2666
I/O Interface	**PoE**	-	-	-	-
I/O Interface	**Ethernet**	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210"	1x GbE by Intel® I219 1x GbE by Intel® I210"
I/O Interface	**CAN bus**	-	-	-	-
I/O Interface	**Video Port**	2x DVI-D	2x DVI-D	2x DVI-D	2x DVI-D
I/O Interface	**Serial Port**	1x RS-232/422/485 1x RS-422/485 3x 3-wire RS-232	1x RS-232/422/485 1x RS-422/485 3x 3-wire RS-232	1x RS-232/422/485 1x RS-422/485 3x 3-wire RS-232	1x RS-232/422/485 1x RS-422/485 3x 3-wire RS-232
I/O Interface	**USB 2.0**	3 (internal)	3 (internal)	3 (internal)	3 (internal)
I/O Interface	**USB 3.2/ USB 3.1**	4	4	4	4
I/O Interface	**Audio**	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
I/O Interface	**Digital I/O**	-	-	-	-
Storage Interface	**SATA HDD**	2x 2.5" HDD/ SSD	2x 2.5" HDD/ SSD	2x 2.5" HDD/ SSD	2x 2.5" HDD/ SSD
Storage Interface	**mSATA**	1 (SATA + USB 2.0 + USIM)	1 (SATA + USB 2.0 + USIM)	1 (SATA + USB 2.0 + USIM)	1 (SATA + USB 2.0 + USIM)
Storage Interface	**M.2 (M-key)**	1	1	1	-
Expansion Bus	**Mini PCI-E**	-	-	-	-
Expansion Bus	**M.2 (B-key/E-key)**	-	-	-	-
Expansion Bus	**SIM**	1	1	1	1
Expansion Bus	**MezIO®**	-	-	-	-
Expansion Bus	**PCI/PCI Express**	1x PCIe x16 slot @ Gen3, 16-lanes 1x PCIe x8 slot @ Gen2, 4-lanes 3x 33MHz/ 32-bit 5VPCI slots	1x PCIe x16 slot @ Gen3, 16-lanes 4x 33MHz/ 32-bit 5VPCI slots	1x PCIe x16 slot @ Gen3, 16-lanes 1x PCIe x8 slot @ Gen2, 4-lanes 1x PCIe x4 slot @ Gen2, 1-lane	1x PCIe x16 slot @ Gen3, 16-lanes (for GPU installation) 1x PCIe x4 slot @ Gen2, 4-lane 1x 33MHz/ 32-bit 5V PCI slot
Power Supply	**DC Input**	8V to 35V DC	8V to 35V DC	8V to 35V DC	24V DC
Power Supply	**Ignition Control**	-	-	-	-
Environmental	**Operating Temperature**	-25°C to 60°C	-25°C to 60°C	-25°C to 60°C	-25°C to 60°C
Environmental	**Certification**	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC
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	Product Lines	Rugged Embedded			
	Model Name	**Nuvo-6023**	**Nuvo-6032**	**Nuvo-6041**	**Nuvo-6002**
Chassis	**Dimensions (W x D x H)**	184 x 225x 174 mm	184 x 225x 174 mm	184 x 225x 174 mm	124 x 225 x 174 mm
Chassis	**Weight**	3.5 kg	3.5 kg	3.5 kg	2.8 kg
Chassis	**Chassis Construction**	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	**Processor**	Intel® Core™ i7-6700TE Intel® Core™ i5-6500TE Intel® Core™ i3-6100TE Intel® Pentium® G4400TE Intel® Celeron® G3900TE	Intel® Core™ i7-6700TE Intel® Core™ i5-6500TE Intel® Core™ i3-6100TE Intel® Pentium® G4400TE Intel® Celeron® G3900TE	Intel® Core™ i7-6700TE Intel® Core™ i5-6500TE Intel® Core™ i3-6100TE Intel® Pentium® G4400TE Intel® Celeron® G3900TE	Intel® Core™ i7-6700TE Intel® Core™ i5-6500TE Intel® Core™ i3-6100TE Intel® Pentium® G4400TE Intel® Celeron® G3900TE
System	**Chipset**	Intel® H110	Intel® H110	Intel® H110	Intel® H110
System	**Graphics**	Intel® HD Graphics 530/ 510	Intel® HD Graphics 530/ 510	Intel® HD Graphics 530/ 510	Intel® HD Graphics 530/ 510
System	**Acceleration GPU**	-	-	-	-
System	**Memory**	Up to 16 GB DDR4-2133	Up to 16 GB DDR4-2133	Up to 16 GB DDR4-2133	Up to 16 GB DDR4-2133
I/O Interface	**PoE**	-	-	-	-
I/O Interface	**Ethernet**	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210
I/O Interface	**CAN bus**	-	-	-	-
I/O Interface	**Video Port**	2x DVI-D	2x DVI-D	2x DVI-D	2x DVI-D
I/O Interface	**Serial Port**	2x RS-232/422/485 3x 3-wire RS-232	2x RS-232/422/485 3x 3-wire RS-232	2x RS-232/422/485 3x 3-wire RS-232	2x RS-232/422/485 3x 3-wire RS-232
I/O Interface	**USB 2.0**	3 (internal)	3 (internal)	3 (internal)	3 (internal)
I/O Interface	**USB 3.2/ USB 3.1**	4	4	4	4
I/O Interface	**Audio**	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
I/O Interface	**Digital I/O**	-	-	-	-
Storage Interface	**SATA HDD**	3x 2.5" HDD/ SSD	3x 2.5" HDD/ SSD	3x 2.5" HDD/ SSD	1x 2.5" HDD/ SSD
Storage Interface	**mSATA**	1	1	1	1
Storage Interface	**M.2 (M-key)**	-	-	-	-
Expansion Bus	**Mini PCI-E**	-	-	-	-
Expansion Bus	**M.2 (B-key/E-key)**	-	-	-	-
Expansion Bus	**SIM**	-	-	-	-
Expansion Bus	**MezIO®**	-	-	-	-
Expansion Bus	**PCI/PCI Express**	1x PCIe x16 slot @Gen3, 16-lanes 1x PCIe x4 slots @Gen2, 2-lanes 1x PCIe x4 slots @Gen2, 1-lane 2x 33MHz/ 32-bit 5V PCI slots	1x PCI Express x16 slot 1x PCI Express x8 slot 3x 33MHz/32-bit PCI slots	1x PCIe x16 slot @Gen3, 16-lanes 4x 33MHz/ 32bit 5V PCI Slots	1x PCI Express x16 slot 1x PCI Express x8 slot
Power Supply	**DC Input**	8V to 35V DC	8V to 35V DC	8V to 35V DC	8V to 35V DC
Power Supply	**Ignition Control**	-	-	-	-
Environmental	**Operating Temperature**	-25°C to 60°C	-25°C to 60°C	-25°C to 60°C	-25°C to 60°C
Environmental	**Certification**	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC
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Product Lines		Rugged Embedded			
Model Name		POC-700	POC-700-FT	POC-500	POC-400
Chassis	Dimensions (W x D x H)	64 x 116 x 176 mm	176x 116 x 52 mm	64x 116 x 176 mm (POC-515) 82x 118 x 176 mm (POC-545)	56 x 108 x 153 mm
	Weight	1.2 kg	1.2 kg	1.2 kg (POC-515) 1.4 kg (POC-545)	0.96 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® Core™ i3-N305 (POC-715) Intel® Atom® x7425E (POC-712)	Intel® Core™ i3-N305 (POC-715) Intel® Atom® x7425E (POC-712)	AMD Ryzen™ V1605B (POC-515) AMD Ryzen™ V1807B (POC-545)	Intel® Atom® x6425E
	Chipset	-	-	-	-
	Graphics	Intel® HD Graphics with32EUs(POC-715) Intel® HD Graphics with24EUs(POC-712)	Intel® HD Graphics with32EUs(POC-715-FT) Intel® HD Graphics with24EUs(POC-712-FT)	Vega GPU with 8 compute units (POC-515) Vega GPU with 11 compute units (POC-545)	Intel® UHD Graphics
	Acceleration GPU	-	-	-	-
	Memory	Up to 16 GB DDR5-4800	Up to 16 GB DDR5-4800	Up to 32GB DDR4-2400 (POC-515) Up to 32GB DDR4-3200 (POC-545)	Up to 32GB DDR4-3200
I/O Interface	PoE	IEEE 802.3at (25.5W) for 4 GbE ports (POC-715)	IEEE 802.3at (25.5W) for 4 GbE ports (POC-715-FT)	IEEE 802.3at (25.5W) for 4 GbE ports	Optional (Port 2 to 3, IEEE 802.3at, 25.5W)
	Ethernet	4x GbE by Intel® I350-AM4	4x GbE by Intel® I350-AM4	4x GbE by Intel® I350	3x 2.5GBASE-T by Intel® I225
	CAN bus	-	-	-	-
	Video Port	1x DP++ 1x HDMI™	1x DP++ 1x HDMI™	1x VGA 1x DisplayPort	2x DisplayPort
	Serial Port	1x RS-232/422/485 3x 3-wire RS-232 or 1x RS-422/485	1x RS-232/422/485 3x 3-wire RS-232 or 1x RS-422/485	1x RS-232/422/485 3x 3-wire RS-232	1x RS-232/422/485 3x 3-wire RS-232
	USB 2.0	-	-	-	2
	USB 3.2/ USB 3.1	4	4	4	2
	Audio	-	-	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	4 DI +4 DO	4 DI +4 DO	Optional via MezIO® module	Optional via MezIO® module
Storage Interface	SATA HDD	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module
	mSATA	-	-	-	-
	M.2 (M-key)	1	1	1	1
Expansion Bus	Mini PCI-E	1	1	1	-
	M.2 (B-key/E-key)	-	-	-	1x M.2 E-key
	SIM	1	1	1	-
	MezIO®	Yes	Yes	Yes	Yes
	PCI/PCI Express	-	-	-	-
Power Supply	DC Input	8V to 35V DC	8V to 35V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module
Environmental	Operating Temperature	-25°C to 70°C	-25°C to 60°C	-25°C to 70°C	-25°C to 70°C
	Certification	CE/ FCC, UL 62368-1, EN62368-1	CE/ FCC	CE/ FCC	CE/ FCC
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Product Lines		Rugged Embedded			Machine VIsion
Model Name		POC-465AWP	POC-40/ POC-40+	POC-300	Nuvis-7306RT
Chassis	Dimensions (W x D x H)	106 x 159.7x 79 mm	52 x 89 x 112 mm	56 x 108 x 153 mm	240 x 225 x 111 mm
	Weight	1.45 kg	0.6 kg	0.96 kg	4.5 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® Atom® x6425E	Intel® Atom® x6211E(POC-40) Intel® Atom® x6413E(POC-40+)	Intel® Atom™ E3950 quad-core Intel® Pentium® N4200 quad-core	Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T
	Chipset	-	-	-	Intel® Q370
	Graphics	Intel® UHD Graphics	Intel® UHD Graphics	Intel® HD Graphics 505	Intel® UHD Graphics 630
	Acceleration GPU	-	-	-	Up to 120W GPU Card
	Memory	Up to 32GB DDR4-3200	Up to 32GB DDR4-3200	Up to 8GB DDR3L-1866	Up to 64 GB DDR4-2666/ 2400
I/O Interface	PoE	-	-	Optional (Port 2 to 3, IEEE 802.3at, 25.5W)	IEEE 802.3at (25.5W) for 4 GbE ports
	Ethernet	2x 2.5GbE by Intel® I226-IT via M12	2x GbE by Intel® I210	3x GbE by Intel® I210	6x GbE by Intel® I219 and I210
	CAN bus	-	-	-	-
	Video Port	1x VGA via M12	1x DisplayPort	1x DVI-I	1x VGA 1x DVI-D 1x DisplayPort
	Serial Port	1x isolated RS-232 via M12 1x isolated RS-422/485 via M12	1x RS-232/422/485 1x isolated RS-422/485 (POC-40+) 1x 3-wire RS-232(POC-40)	1x RS-232/422/485 3x 3-wire RS-232	2x RS-232/422/485 2x RS-232
	USB 2.0	2 (via M12)	2	2	1 (internal)
	USB 3.2/ USB 3.1	-	2x USB 3.1 Gen1	2x USB 3.1 Gen1	8x USB 3.1 Gen1
	Audio	-	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	-	Optional 4 DI + 4 DO	Optional via MezIO® module	Patented DTIO/ NuMCU for real-time trigger control
Storage Interface	SATA HDD	-	-	Optional via MezIO® module	2x 2.5" HDD/ SSD
	mSATA	-	-	1	1 (mux. with mini-PCIe)
	M.2 (M-key)	1	1	-	1
Expansion Bus	Mini PCI-E	1	1 (POC-40+)	1	1
	M.2 (B-key/ E-Key)	-	1x M.2 B-key (POC-40) 1x M.2 E-key	-	1x M.2 B-key
	SIM	1	1	1	3
	MezIO®	-	-	Yes	-
	PCI/PCI Express	-	-	-	2x PCIe x16 slot, supports - Independent NVIDIA® GPU (120W) - COTS CameraLink and CoaXPress camera interface card
Power Supply	DC Input	8V to 35V DC	12V to 20V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	Built-in	Built-in (POC-40-IGN/ POC-40+IGN)	Optional via MezIO® module	-
Environmental	Operating Temperature	-25°C to 70°C	-25°C to 70°C	-25°C to 70°C with SSD -10°C to 50°C with HDD	with 35W CPU -25°C to 60°C with 65W CPU -25°C to 50°C
	Certification	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC
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	Product Lines	Machine VIsion	GPU Computing		
	Model Name	**Nuvis-534RT**	**RGS-8805GC**	**GT-92GC**	**Nuvo-10208GC**
Chassis	Dimensions (W x D x H)	82 x 118 x 176 mm	444 x 350 x 88 mm	440 x 250 x 88 mm	268 x 400 x 196 mm
Chassis	Weight	1.5 kg	8.6 kg	7.7 kg	6.5 kg
Chassis	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	AMD Ryzen™ V1807B	AMD® EPYC™ 7003 Milan series server CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™ CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU
System	Chipset	-	-	Intel® R680E	Intel® R680E
System	Graphics	Vega GPU with 11 compute units	ASPEED AST2500 BMC	Intel® UHD Graphics 770 (32EU)	Intel® HD Graphics 770/ 730
System	Acceleration GPU	-	NVIDIA® RTX™ A6000/ A4500 GPU	NVIDIA® RTX™ 2000 ADA GPU	Dual NVIDIA® RTX™ 4070Ti/ 4080/ A6000/ A5000 GPU
System	Memory	Up to 32 GB DDR4-3200	Up to 512 GB DDR4-3200	Up to 64 GB DDR5-4800	Up to 128 GB DDR5-4800
I/O Interface	PoE	IEEE 802.3at (25.5W) for 4 GbE ports	IEEE 802.3at (25.5W) for 4 GbE ports	IEEE 802.3at (25.5W) for 8 GbE ports	-
I/O Interface	Ethernet	4x GbE by Intel® I350	2x 10GBASE-T by Intel® X550-AT2 4x GbE by Intel® I350-AM4	1x GbE by Intel® I219-LM 8x GbE by Intel® I350-AM4	2x 2.5GbE by Intel® I226-IT 1x GbE by Intel® I219LM 1x 10GBASE-T port (Optional)
I/O Interface	CAN bus	-	-	2x isolated CAN 2.0 port	-
I/O Interface	Video Port	1x VGA 1x DisplayPort	1x VGA	1x HDMI™ 1x DisplayPort	1x VGA 1x DisplayPort
I/O Interface	Serial Port	1x RS-232/422/485 3x 3-wire RS-232	2x RS-232/422/485	2x isolated 3-wire RS-232/422/485	2x RS-232/422/485
I/O Interface	USB 2.0	-	-	-	1 (internal)
I/O Interface	USB 3.2/ USB 3.1	4	4	4	6
I/O Interface	Audio	1x mic-in and speaker-out	-	1x mic-in and speaker-out	1x mic-in and speaker-out
I/O Interface	Digital I/O	Patented DTIO/ NuMCU for real-time trigger control	-	4 DI +4 DO	-
Storage Interface	SATA HDD	-	4x Easy-swap tray for 2.5" HDD/ SSD	2x hot-swap tray for 2.5" HDD/ SSD	2x hot-swap tray for 2.5" HDD/ SSD
Storage Interface	mSATA	-	-	-	-
Storage Interface	M.2 (M-key)	1	1	1	1x M-key socket (Gen4 x4) 1x M-key tray (Gen4 x4) (Optional)
Expansion Bus	Mini PCI-E	-	2	2	2
Expansion Bus	M.2 (B-key/E-key)	-	1x M.2 B-key	-	1x M.2 B-key
Expansion Bus	SIM	-	4	2	3
Expansion Bus	MezIO®	-	-	-	-
Expansion Bus	PCI/PCI Express	-	1x PCIe x16 slot @ Gen4, 16-lanes supporting NVIDIA® RTX™ A6000/ A4500 2x PCIe x16 slots @ Gen4, 8-lanes	-	2x PCIe x16 slot@Gen4, 8-lanes 3x PCIe x8 slot@Gen3, 4-lanes
Power Supply	DC Input	8V to 35V DC	8V to 48V DC	8V to 48V DC	8V to 48V DC
Power Supply	Ignition Control	-	Built-in	Built-in	Built-in
Environmental	Operating Temperature	-25°C to 70°C	-25°C to 60°C with 100% CPU/ GPU loading	**with 35W CPU** -25°C ~ 55°C (without PoE) -25°C ~ 50°C (with PoE 50W) **with 65W CPU** -25°C ~ 35°C (without PoE)	With 35W CPU and 350W GPU -25°C to 60°C with 65W CPU and 350W GPU -25°C to 60°C (with optional fan kit) -25°C to 50°C (without optional fan kit)
Environmental	Certification	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC, MIL-STD-810H
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	Product Lines	GPU Computing			
	Model Name	**Nuv o-10108GC**	**Nuvo-8208GC**	**Nuvo-8108GC**	**Nuvo-8108GC-XL**
Chassis	Dimensions (W x D x H)	214 x 400 x 196 mm	235 x 360 x 186 mm	170 x 360 x 198 mm	193 x 388 x 198 mm
Chassis	Weight	6.2 kg	8.6 kg	5 kg	5.2 kg
Chassis	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
System	Chipset	Intel® R680E	Intel® C246	Intel® C246	Intel® C246
System	Graphics	Intel® HD Graphics 770/ 730	x16 PEG port, or Intel® HD Graphics 630	x16 PEG port, or Intel® UHD Graphics 630	x16 PEG port, or Intel® HD Graphics 630
System	Acceleration GPU	Up to 350W GPU card	Dual 250W GPU card	NVIDIA® RTX™ 30 GPU	NVIDIA® RTX™ 3080 GPU
System	Memory	Up to 128 GB DDR5-4800	Up to 128 GB DDR4-2133	Up to 128 GB DDR4-2133	Up to 128 GB DDR4-2133
I/O Interface	PoE	-	-	-	-
I/O Interface	Ethernet	2x 2.5GbE by Intel® I226-IT 1x GbE by Intel® I219LM 1x 10GBASE-T port (Optional)	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210
I/O Interface	CAN bus	-	-	-	-
I/O Interface	Video Port	1x VGA 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort
I/O Interface	Serial Port	2x RS-232/422/485	2x RS-232/422/485	2x RS-232/422/485	2x RS-232/422/485
I/O Interface	USB 2.0	1 (internal)	1 (internal)	1 (internal)	1 (internal)
I/O Interface	USB 3.2/ USB 3.1	6	8	8	8
I/O Interface	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
I/O Interface	Digital I/O	-	-	-	-
Storage Interface	SATA HDD	1x hot-swap tray for 2.5" HDD/ SSD	2x hot-swap tray for 2.5" HDD/ SSD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD
Storage Interface	mSATA	-	2 (mux. with mini-PCIe)	2 (mux. with mini-PCIe)	2 (mux. with mini-PCIe)
Storage Interface	M.2 (M-key)	1x M-key socket (Gen4 x4) 1x M-key tray (Gen4 x4) (Optional)	1	1	1
Expansion Bus	Mini PCI-E	2	2	2	2
Expansion Bus	M.2 (B-key/E-key)	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key
Expansion Bus	SIM	3	4	4	4
Expansion Bus	MezIO®	-	-	-	-
Expansion Bus	PCI/PCI Express	1x PCIe x16 slot@Gen4, 16-lanes, supporting NVIDIA® RTX™ A4000, A5000, A6000, 6000 Ada, and selected RTX™ 40 Series GPU cards 3x PCIe x8 slot@Gen3, 4-lanes	2x PCIe x16 slot @ Gen3, 8-lanes supporting dual 250W GPU card 2x PCIe x8 slots @ Gen3, 4-lanes 1x PCIe x4 slot @ Gen3, 1-lane (Installing a GPU card will obstruct one PCIe slot!)	1x PCIe x16 slot @ Gen3, 8-lanes supporting NVIDIA® RTX™ 30 series 1x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slots @ Gen3, 4-lanes (Installing a GPU card will obstruct one PCIe slot!)	1x PCIe x16 slot @ Gen3, 8-lanes supporting NVIDIA® RTX™ 3080 1x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slots @ Gen3, 4-lanes (Installing a GPU card will obstruct one PCIe slot!)
Power Supply	DC Input	8V to 48V DC	8V to 35V DC	8V to 48V DC	8V to 48V DC
Power Supply	Ignition Control	Built-in	Built-in	Built-in	Built-in
Environmental	Operating Temperature	**With 35W CPU and NVIDIA® 350W GPU** -25°C to 60°C **with 65W CPU and NVIDIA® 350W GPU** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)	**With 35W CPU and dual NVIDIA® 250W GPU** -25°C to 60°C **with ≥65W CPU and dual NVIDIA® 250W GPU** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)	**With 35W CPU and one NVIDIA® 250W GPU** -25°C to 60°C **with ≥65W CPU and one NVIDIA® 250W GPU** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)	**With 35W CPU and NVIDIA® RTX™ 30 GPU** -25°C to 60°C **with ≥65W CPU and NVIDIA® RTX™ 30 GPU** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)
Environmental	Certification	CE/ FCC, MIL-STD-810H	CE/ FCC	CE/ FCC	CE/ FCC
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Product Lines		GPU Computing			
Model Name		Nuvo-8108GC-QD	Nuvo-8240GC	Nuvo-6108GC	Nuvo-6108GC-IGN
Chassis	Dimensions (W x D x H)	170.2 x 360 x 201.8 mm	190 x 271 x 198.5 mm	167 x 360 x174 mm	178 x 360 x 174 mm
	Weight	5.8 kg	5 kg	4.7 kg	4.7 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® Xeon® E-2176G/ E-2278GE E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon™ E3-1275 v5 Intel® Xeon™ E3-1268L v5 Intel® Core™ i7- 6700/ 6700TE Intel® Core™ i5- 6500/ 6500TE	Intel® Xeon™ E3-1275 v5 Intel® Xeon™ E3-1268L v5 Intel® Core™ i7- 6700/ 6700TE Intel® Core™ i5- 6500/ 6500TE
	Chipset	Intel® C246	Intel® C246	Intel® C236	Intel® C236
	Graphics	x16 PEG port, or Intel® HD Graphics 630	Intel® UHD Graphics 630	x16 PEG port, or Intel® HD Graphics 530	x16 PEG port, or Intel® HD Graphics 530
	Acceleration GPU	NVIDIA® RTX™ A6000/ A4500 GPU	Dual NVIDIA® L4/ T4/ A2 GPU	Up to 250W GPU card	Up to 250W GPU card
	Memory	Up to 128 GB DDR4-2133	Up to 128 GB DDR4-2133	Up to 32 GB DDR4-2133	Up to 32 GB DDR4-2133
I/O Interface	PoE	-	-	-	-
	Ethernet	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210	1x GbE by Intel® I219 1x GbE by Intel® I210
	CAN bus	-	-	-	-
	Video Port	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	2x DVI-D	2x DVI-D
	Serial Port	2x RS-232/422/485	2x RS-232/422/485	2x RS-232/422/485	2x RS-232/422/485
	USB 2.0	1 (internal)	1 (internal)	1 (internal)	1 (internal)
	USB 3.2/ USB 3.1	8	8	4	4
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	-	-	-	-
Storage Interface	SATA HDD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD	4x 2.5" HDD/ SSD	2x easy-swap tray for 2.5" HDD/ SSD 1x 2.5" HDD/ SSD
	mSATA	2 (mux. with mini-PCIe)	2 (mux. with mini-PCIe)	-	-
	M.2 (M-key)	1	1	-	-
Expansion Bus	Mini PCI-E	2	2	1	1
	M.2 (B-key/ E-Key)	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key
	SIM	4	4	1	1
	MezIO®	-	-	-	-
	PCI/PCI Express	1x PCIe x16 slot @ Gen3, 8-lanes supporting NVIDIA® RTX™ A6000/ A4500 1x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slots @ Gen3, 4-lanes (Installing a GPU card will obstruct one PCIe slot!)	2x PCIe x16 slot, supporting NVIDIA® L4/ T4/ A2 GPU 2x PCIe x8 slots @ Gen3, 4-lanes	1x PCIe x16 slot @ Gen3, 16-lanes, supporting NVIDIA® RTX™ 3070 GPU 2x PCIe x8 slot @ Gen3, 4-lanes	1x PCIe x16 slot @ Gen3, 16-lanes, supporting NVIDIA® RTX™ 3070 GPU 2x PCIe x8 slot @ Gen3, 4-lanes
Power Supply	DC Input	8V to 48V DC	8V to 48V DC	24V DC	24V DC
	Ignition Control	Built-in	Built-in	-	Built-in
Environmental	Operating Temperature	**With 35W CPU and NVIDIA® RTX™ A6000/ A4500 GPU** -25°C to 60°C **with ≥65W CPU and NVIDIA® RTX™ A6000/ A4500 GPU** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)	**with 35W CPU** -25°C to 60°C **with 65W CPU** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)	-25°C to 60°C	-25°C to 60°C
	Certification	CE/ FCC	CE/ FCC	CE/ FCC, UL 62368-1	CE/ FCC
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Product Lines		GPU Computing			
Model Name		Nuvo-9160GC	Nuvo-9166GC	Nuvo-7168GC	Nuvo-7166GC/ 7164GC
Chassis	Dimensions (W x D x H)	240 x 225 x 110.5 mm	240 x 225 x 110.5 mm	240 x 225 x 111 mm	240 x 225 x 111 mm
	Weight	3.58 kg	4.0 kg	4.5 kg	4.5 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
	Chipset	Intel® Q670E	Intel® Q670E	Intel® Q370	Intel® Q370
	Graphics	Intel® UHD Graphics 770/ 730	Intel® UHD Graphics 770/ 730	Intel® UHD Graphics 630	Intel® UHD Graphics 630
	Acceleration GPU	Up to 130W GPU card	NVIDIA® L4 GPU	NVIDIA® RTX™ A2000 GPU	NVIDIA® L4/ T4/ A2 GPU
	Memory	Up to 64 GB DDR5 4800	Up to 64 GB DDR5 4800	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400
I/O Interface	PoE	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)
	Ethernet	5x 2.5GbE by Intel® I225-IT 1x GbE by Intel® I219-LM	5x 2.5GbE by Intel® I225-IT 1x GbE by Intel® I219-LM	6x GbE by Intel® I219 and I210	6x GbE by Intel® I219 and I210
	CAN bus	-	-	-	-
	Video Port	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort
	Serial Port	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 2x RS-232
	USB 2.0	2	2	1 (internal)	1 (internal)
	USB 3.2/ USB 3.1	7 (incl. 1x 20Gbps type-C)	7 (incl. 1x 20Gbps type-C)	8	8
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module
Storage Interface	SATA HDD	2x 2.5" HDD/ SSD	2x 2.5" HDD/ SSD	2x 2.5" HDD/ SSD	2x 2.5" HDD/ SSD
	mSATA	-	-	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)
	M.2 (M-key)	1 (Gen4 x4)	1 (Gen4 x4)	1	1
Expansion Bus	Mini PCI-E	1	1	1	1
	M.2 (B-key/ E-Key)	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key
	SIM	2	2	3	3
	MezIO®	Yes	Yes	Yes	Yes
	PCI/PCI Express	1x PCIe x16 slot, supporting up to 130W GPU card	2x PCIe x16 slot@Gen3, 8-lanes PCIe signal in Cassette for installing NVIDIA® L4 GPU and one additional PCIe card	1x PCIe x16 slot @ Gen3, 16-lanes, supporting NVIDIA® RTX™ A2000	1x PCIe x16 slot, supporting NVIDIA® L4/ T4/ A2 GPU (Nuvo-7164GC) 2x PCIe x16 slot, supporting NVIDIA® L4/ T4/ A2 GPU GPU and one additional PCIe card (Nuvo-7166GC)
Power Supply	DC Input	8V to 48V DC	8V to 48V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module	Optional via MezIO® module
Environmental	Operating Temperature	**with 35W CPU and 130W GPU** -25°C to 60°C **with 65W CPU and 130W GPU** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)	**with 35W CPU and NVIDIA® L4 GPU** -25°C to 60°C **with 65W CPU and NVIDIA® L4 GPU** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)	**with 35W CPU and NVIDIA® RTX™ A2000** -25°C to 60°C **with 65W CPU and NVIDIA® RTX™ A2000** -25°C to 60°C (configured as 35W TOP) -25°C to 50°C (configured as 65W TOP)	**with 35W CPU** -25°C to 60°C **with 65W CPU** -25°C to 60°C(configured as 35W TOP) -25°C to 50°C(configured as 65W TOP)
	Certification	CE/ FCC	CE/ FCC, UL 62368-1	CE/ FCC	CE/ FCC
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Product Lines		GPU Computing		in-vehicle Computing	
Model Name		Nuvo-7160GC	Nuvo-5095GC	Nuvo-9200VTC	Nuvo-9100VTC
Chassis	Dimensions (W x D x H)	240 x 225 x 111 mm	240 x 225 x 111 mm	240 x 225 x 103 mm	240 x 225 x 84 mm
	Weight	4.5 kg	4.5 kg	3.9 kg	3.7 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Core™ i7-6700/ 6700TE Intel® Core™ i5-6500/ 6500TE	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU
	Chipset	Intel® Q370	Intel® Q170	Intel® Q670E	Intel® Q670E
	Graphics	x16 PEG port, or Intel® UHD Graphics 630	x16 PEG port, or Intel® HD Graphics 530/ 510	Intel® UHD Graphics 770	Intel® UHD Graphics 770
	Acceleration GPU	Up to 120W GPU card	Up to 75W GPU card	-	-
	Memory	Up to 64 GB DDR4-2666/ 2400	Up to 32 GB DDR4-2133	Up to 64 GB DDR5 4800	Up to 64 GB DDR5 4800
I/O Interface	PoE	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	Optional (Port 3 to 6, IEEE 802.3at, 25.5W)	IEEE 802.3at (25.5W) for 4x/ 8x GbE ports via M12 X-coded or RJ45	IEEE 802.3at (25.5W) for 4x/ 8x GbE ports via M12 X-coded or RJ45
	Ethernet	6x GbE by Intel® I219 and I210	6x GbE by Intel® I219 and I210	1x 2.5GbE by Intel® I225-IT 1x GbE by Intel® I219-LM	1x 2.5GbE by Intel® I225-IT 1x GbE by Intel® I219-LM
	CAN bus	-	-	1x isolated CAN 2.0 port	1x isolated CAN 2.0 port
	Video Port	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort
	Serial Port	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 1x RS-232	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 2x RS-232
	USB 2.0	1 (internal)	4	2	1 (internal)
	USB 3.2/ USB 3.1	8	4	7 (incl. 1x 20Gbps type-C)	7 (incl. 1x 20Gbps type-C)
	Audio	1x mic-in and speaker-out	1x mic-in and Speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	Optional via MezIO® module	Optional via MezIO® module	4 DI + 4 DO	4 DI + 4 DO
Storage Interface	SATA HDD	2x 2.5" HDD/ SSD	2x 2.5" HDD/ SSD	2x hot-swap tray for 2.5" HDD/ SSD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD
	mSATA	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)
	M.2 (M-key)	1	-	1 (Gen4 x4)	1 (Gen4 x4)
Expansion Bus	Mini PCI-E	1	2	3	3
	M.2 (B-key/ E-Key)	1x M.2 B-key	-	2x M.2 B-key	2x M.2 B-key
	SIM	3	2	5	5
	MezIO®	Yes	Yes	-	-
	PCI/PCI Express	1x PCIe x16 slot, supporting NVIDIA® GPU (120W)	1x PCIe x16 slot, supporting NVIDIA® GPU (75W)	1x PCIe x16 slot@Gen3, 16-lanes PCIe signal in Cassette	-
Power Supply	DC Input	8V to 35V DC	8V to 35V DC	8V to 48V DC	8V to 48V DC
	Ignition Control	Optional via MezIO® module	Optional via MezIO® module	Built-in	Built-in
Environmental	Operating Temperature	**with 35W CPU and NVIDIA® 120W GPU** -25°C to 60°C **with 65W CPU and NVIDIA® 120W GPU** -25°C to 50°C	with 35W CPU -25°C to 60°C with 65W/ 51W CPU -25°C to 50°C	**with 35W CPU** -40°C to 70°C (with 1 memory module) -40°C to 60°C(with 2 memory modules) **with 65W CPU** -40°C to 50°C (configured as 65W TDP with 2-slots memory)	**with 35W CPU** -40°C to 70°C (with 1 memory module) -40°C to 60°C(with 2 memory modules) **with 65W CPU** -40°C to 50°C (configured as 65W TDP with 2-slots memory)
	Certification	CE/ FCC	CE/ FCC	E-Mark, EN 50121, CE/ FCC	E-Mark, EN 50121, CE/ FCC
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Product Lines		in-vehicle Computing			
Model Name		Nuvo-7250VTC/ 7200VTC	Nuvo-7100VTC	Nuvo-5100VTC	Nuvo-2610VTC
Chassis	Dimensions (W x D x H)	240 x 225 x 103 mm	240 x 225 x 84 mm	240 x 225 x 79 mm	205 x 155 x 58 mm (Nuvo-2610VTC) 205 x 155 x 86 mm (Nuvo-2611VTC) 205 x 155 x 86 mm (Nuvo-2612VTC)
	Weight	4.1 kg (Nuvo-7250VTC) 3.7 kg (Nuvo-7200VTC)	3.5 kg	3.3 kg	1.9 kg (Nuvo-2610VTC) 2.5 kg (Nuvo-2611VTC) 2.3 kg (Nuvo-2612VTC)
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® Core™ i7-9700TE/ i7-8700T Intel® Core™ i5-9500TE/ i5-8500T Intel® Core™ i3-9100TE/ i3-8100T	Intel® Core™ i7-9700TE/ i7-8700T Intel® Core™ i5-9500TE/ i5-8500T Intel® Core™ i3-9100TE/ i3-8100T	Intel® Core™ i7- 6700TE Intel® Core™ i5- 6500TE Intel® Core™ i3- 6100TE	Intel® Atom® x6425E
	Chipset	Intel® Q370	Intel® Q370	Intel® Q170	-
	Graphics	Intel® HD Graphics 630	Intel® HD Graphics 630	Intel® HD Graphics 530	Intel® UHD Graphics
	Acceleration GPU	-	-	-	-
	Memory	Up to 64 GB DDR4-2666	Up to 64 GB DDR4-2666	Up to 32 GB DDR4-2133	Up to 32GB DDR4-3200
I/O Interface	PoE	IEEE 802.3at (25.5W) for 4x/ 8x GbE ports	IEEE 802.3at (25.5W) for 4x/ 8x GbE ports	IEEE 802.3at (25.5W) for 4x/ 8x GbE ports	IEEE 802.3at (25.5W) for 4 GbE ports via M12
	Ethernet	2x GbE by Intel® I219 and I210 (RJ-45) 4x/ 8x GbE by Intel® I210 (M12 x-coded or RJ-45)	2x GbE by Intel® I219 and I210 (RJ-45) 4x/ 8x GbE by Intel® I210 (M12 x-coded or RJ-45)	2x GbE by Intel® I219 and I210 (RJ-45) 4x/ 8x GbE by Intel® I210(M12 x-coded or RJ-45)	4x GbE by Intel® I210
	CAN bus	1x isolated CAN 2.0 port	1x isolated CAN 2.0 port	1x CAN 2.0 port	-
	Video Port	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 1x DisplayPort	1x VGA 1x DVI-D 2x DisplayPort	1x DVI-I
	Serial Port	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 2x RS-232	2x RS-232/422/485 1x RS-232	1x isolated RS-485 3x 3-wire RS-232 or 1x RS-422/485
	USB 2.0	1 (internal)	1 (internal)	4	2
	USB 3.2/ USB 3.1	8	8	4	1
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	4 DI + 4 DO Polling, Change of State (COS)	4 DI + 4 DO Polling, Change of State (COS)	4 DI + 4 DO Polling, Change of State (COS)	4 DI + 4 DO
Storage Interface	SATA HDD	2x hot-swap tray for 2.5" HDD/ SSD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD	1x 2.5" HDD/ SSD 1x hot-swap tray for 2.5" HDD/ SSD	1x front-accessible HDD tray for 2.5" HDD/ SSD
	mSATA	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)	1 (mux. with mini-PCIe)	-
	M.2 (M-key)	1	1	-	1
Expansion Bus	Mini PCI-E	3	3	4	2
	M.2 (B-key/ E-Key)	2x M.2 B-key	2x M.2 B-key	-	1x M.2 B-key
	SIM	6	6	4	2
	MezIO®	-	-	-	-
	PCI/PCI Express	1x PCIe with PB-2500J pre-installed (Nuvo-7250VTC) 1x PCIe x16 slot@Gen3, 16-lanes (Nuvo-7200VTC)	-	-	1x PCIe x4 slot @ Gen3, 2-lanes PCIe signals in Cassette (Nuvo-2612VTC)
Power Supply	DC Input	8V to 35V DC with SuperCAP UPS (Nuvo-7250VTC)	8V to 35V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	Built-in	Built-in	Built-in	Built-in
Environmental	Operating Temperature	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C
	Certification	E-Mark, EN45545, EN50121, CE/ FCC	E-Mark, EN45545, EN50121, CE/ FCC	E-Mark, EN45545, EN50155, CE/ FCC	E-Mark, EN50155, EN45545, CE/ FCC
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■ Rugged Embedded ■ Machine Vision ■ In-vehicle Computing ■ Surveillance/ Video Analytics ■ GPU Computing ■ NVIDIA® GPU ■ IoT Gateway

Product Lines		in-vehicle Computing			
Model Name		POC-751VTC	POC-551VTC	POC-451VTC	POC-351VTC
Chassis	Dimensions (W x D x H)	176 x 116 x 64 mm	176 x 116 x 64 mm	153 x 108 x 72 mm	153 x 108 x 56 mm (POC-351VTC) 153 x 108 x 68 mm (POC-351VTC-70)
	Weight	1.7 kg	1.3 kg	1.4 kg	1.0 kg (POC-351VTC) 1.1 kg (POC-351VTC-70)
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® Core™ i3-N305	AMD Ryzen™ V1605B	Intel® Atom® x6425E	Intel® Atom™ E3950 quad-core
	Chipset	-	-	-	-
	Graphics	Intel® UHD Graphics	Vega GPU with 6 compute units	Intel® UHD Graphics	Intel® HD Graphics 505
	Acceleration GPU	-	-	-	-
	Memory	Up to 16GB DDR5-4800	Up to 16 GB DDR4-2400	Up to 32GB DDR4-3200	Up to 8GB DDR3L-1866
I/O Interface	PoE	IEEE 802.3at (25.5W) for 4 GbE ports	IEEE 802.3at (25.5W) for 4 GbE ports	IEEE 802.3at (25.5W) for 2 GbE ports	IEEE 802.3at (25.5W) for 2 GbE ports
	Ethernet	4x GbE by Intel® I350	4x GbE by Intel® I350	3x 2.5GBASE-T by Intel® I225	3x GbE by Intel® I210
	CAN bus	2x isolated CAN 2.0 port	1x CAN 2.0 port	-	1x isolated CAN 2.0 port
	Video Port	1x DP++ 1x HDMI™	1x VGA 1x DisplayPort	2x DisplayPort	1x DVI-I
	Serial Port	1x RS-232/422/485 3x 3-wire RS-232 or 1x RS-422/485	1x RS-232/422/485 3x 3-wire RS-232	1x RS-232/422/485 3x 3-wire RS-232	1x RS-232/422/485 3x 3-wire RS-232
	USB 2.0	-	-	2	2
	USB 3.2/ USB 3.1	4	4	2	2
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
	Digital I/O	4 DI + 4 DO	4 DI + 4 DO Polling, Change of State (COS)	4 DI + 4 DO Polling, Change of State (COS)	4 DI + 4 DO Polling, Change of State (COS)
Storage Interface	SATA HDD	-	-	-	-
	mSATA	-	1x mSATA	-	2x mSATA
	M.2 (M-key)	1	1	2	-
Expansion Bus	Mini PCI-E	2	3	1	3
	M.2 (B-key/ E-Key)	-	1x M.2 B-key	1x M.2 B-key 2x M.2 E-key	1x M.2 B-key
	SIM	2	4	3	4
	MezIO®	-	-	-	-
	PCI/PCI Express	-	-	-	-
Power Supply	DC Input	8V to 35V DC	8V to 35V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	Built-in	Built-in	Built-in	Built-in
Environmental	Operating Temperature	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-25°C to 70°C -40°C to 70°C (optional)
	Certification	EN45545, EN50121, CE/ FCC	E-Mark, EN50155, EN45545, CE/ FCC	E-Mark, CE/ FCC	E-Mark, CE/ FCC
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Product Lines		Railway Computer		NVIDIA® GPU	
Model Name		GT-92RL-H	Nuvo-2615RL	NRU-230V-AWP/ NRU-240S-AWP	NRU-220S/ NRU-222S
Chassis	Dimensions (W x D x H)	440 x 250 x 88 mm	205 x 155 x 86 mm	225 x 195 x89 mm	230 x 173 x 66 mm
	Weight	8 kg	2.7 kg	4.4 kg	2.6 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™ CPU	Intel® Atom® x6425E	NVIDIA® Jetson AGX Orin™	NVIDIA® Jetson AGX Orin™
	Chipset	Intel® R680E	-	-	-
	Graphics	Intel® UHD Graphics 770 (32EU)	Intel® UHD Graphics	-	-
	Acceleration GPU	NVIDIA® RTX™ 2000 ADA	-	-	-
	Memory	Up to 64 GB DDR5-4800	Up to 32GB DDR4-3200	32GB/ 64GB LPDDR5 @ 3200 MHz	32GB/ 64GB LPDDR5 @ 3200 MHz
I/O Interface	PoE/ GMSL/ GMSL2	IEEE 802.3at (25.5W) for 8 GbE ports	IEEE 802.3at (25.5W) for 4 GbE ports via M12	4x GbE IEEE 802.3at (25.5W) GbE PoE+ ports 8x GMSL2 ports (NRU-230V-AWP only)	IEEE 802.3bt PoE+PSE for 4 GbE ports
	Ethernet	1x GbE by Intel® I219-LM 8x GbE by Intel® I350-AM4	4x GbE by Intel® I210	1x 10GbE Etherne via M12 X-coded 4x GbE by Intel® I350 via M12 X-coded	2x 2.5GbE by Intel® I225 4x GbE (NRU-220S: via RJ45) (NRU-222S: via M12)
	CAN bus	2x isolated CAN 2.0 port	-	2x isolated CAN 2.0 port and 1x isolated DI via M12 A-coded	2x CAN 2.0 port
	Video Port	1x HDMI™ 1x DisplayPort	1x DVI-I	1x DisplayPort via USB Type C	1x DisplayPort
	Serial Port	2x isolated 3-wire RS-232/422/485	1x isolated RS-485 3x 3-wire RS-232 or 1x RS-422/485	1x isolated RS-485, 1x isolated RS-232 and 1 isolate DO via M12 A-coded	1x isolated RS-485 2x RS-232
	USB 2.0	-	2	2	2
	USB 3.2/ USB 3.1	4	1	1x waterproof USB Type C	1
	Audio	1x mic-in and speaker-out	1x mic-in and speaker-out	-	-
	Digital I/O	4 DI +4 DO	4 DI + 4 DO	1x isolated DI via M12 A-coded 1x isolated DO via M12 A-coded	4 DI + 4 DO
Storage Interface	SATA HDD	2x hot-swap tray for 2.5" HDD/ SSD	1x front-accessible HDD tray for 2.5" HDD/ SSD	2x 2.5" SSD	2x front-accessible 2.5" 7mm SSD
	mSATA	-	-	-	-
	M.2 (M-key)	1	1	1	1
Expansion Bus	Mini PCI-E	2	2	2	2
	M.2 (B-key/ E-Key)	-	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key
	SIM	2	2	3	2
	MezIO®	-	-	-	-
	PCI/PCI Express	-	1x PCIe with PB-2500J pre-installed	-	-
Power Supply	DC Input	43V to 160V DC	43V to 160V DC	8V to 48V DC	8V to 48V DC
	Ignition Control	-	-	Built-in	Built-in
Environmental	Operating Temperature	**with 35W CPU** -40°C ~ 55°C **with 65W CPU** -25°C ~ 35°C	-40°C to 70°C	-25°C to 70°C (30W TDP mode, without 10GbE) -25°C to 60°C (30W TDP mode)	-25°C to 70°C (30 W TDP mode)
	Certification	EN50155, EN45545, CE/ FCC	EN45545-2, EN50155, CE/ FCC	CE/ FCC	CE/ FCC
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Product Lines		NVIDIA® GPU			
Model Name		NRU-171V-PPC	NRU-172S-PPC	NRU-161V-AWP	NRU-162S-AWP
Chassis	Dimensions (W x D x H)	257 x 65 x 176 mm	257 x 65 x 176 mm	225 x 136 x 55 mm	225 x 136 x 55 mm
	Weight	3.8 kg	3.8 kg	3.0 kg	3.0 kg
	Chassis Construction	Aluminum alloy with stainless steel / waterproof	Aluminum alloy with stainless steel / waterproof	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
	IP Rating	IP66	IP66	IP66	IP66
System	Processor	NVIDIA® Jetson Orin™ NX/ NVIDIA® Jetson Orin™ Nano	NVIDIA® Jetson Orin™ NX/ NVIDIA® Jetson Orin™ Nano	NVIDIA® Jetson Orin™ NX/ NVIDIA® Jetson Orin™ Nano	NVIDIA® Jetson Orin™ NX/ NVIDIA® Jetson Orin™ Nano
	Chipset	-	-	-	-
	Graphics	-	-	-	-
	Acceleration GPU	-	-	-	-
	Memory	16GB/ 8GB LPDDR5 @ 3200 MHz 8GB/ 4GB LPDDR5 @ 2133 MHz	16GB/ 8GB LPDDR5 @ 3200 MHz 8GB/ 4GB LPDDR5 @ 2133 MHz	16GB/ 8GB LPDDR5 @ 3200 MHz 8GB/ 4GB LPDDR5 @ 2133 MHz	16GB/ 8GB LPDDR5 @ 3200 MHz 8GB/ 4GB LPDDR5 @ 2133 MHz
Panel	Size	10.1" screen, AG (Anti-Glare) and AF (Anti-Fingerprint)	10.1" screen, AG (Anti-Glare) and AF (Anti-Fingerprint)	-	-
	Touch	Single-finger touch functionality when the screen is wet	Single-finger touch functionality when the screen is wet	-	-
I/O Interface	PoE/ GMSL/ GMSL2	6x waterproof GMSL2	IEEE 802.3bt PoE+PSE for 4 GbE ports	6x waterproof GMSL2	IEEE 802.3bt PoE+PSE for 4 GbE ports
	Ethernet	1x GbE Ethernet via M12 X-coded	1x GbE Ethernet via M12 X-coded 4x GbE by Intel® I350-AM4 via M12 X-coded	1x GbE Ethernet via M12 X-coded	1x GbE Ethernet via M12 X-coded 4x GbE by Intel® I350-AM4 via M12 X-coded
	CAN bus	1x CAN FD port via M12 A-coded	1x CAN FD port via M12 A-coded	1x CAN FD port via M12 A-coded	1x CAN FD port via M12 A-coded
	Video Port	-	-	1x VGA via M12 A-coded	1x VGA via M12 A-coded
	Serial Port	1x RS-232 port via M12 A-coded	1x RS-232 port via M12 A-coded	1x RS-232 port via M12 A-coded	1x RS-232 port via M12 A-coded
	USB 2.0	2 via M12 A-coded	2 via M12 A-coded	2 via M12 A-coded	2 via M12 A-coded
	USB 3.2/ USB 3.1	1x waterproof USB Type C	1x waterproof USB Type C	1x waterproof USB Type C	1x waterproof USB Type C
	Audio	-	-	-	-
	Digital I/O	1x isolated GPS PPS input via M12 A-coded	1x isolated GPS PPS input via M12 A-coded	1x isolated GPS PPS input via M12 A-coded	1x isolated GPS PPS input via M12 A-coded
Storage Interface	SATA HDD	-	-	-	-
	mSATA	-	-	-	-
	M.2 (M-key)	1	1	1	1
Expansion Bus	Mini PCI-E	1	1	1	1
	M.2 (B-key/ E-Key)	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key	1x M.2 B-key
	SIM	2	2	2	2
	MezIO®	-	-	-	-
	PCI/PCI Express	-	-	-	-
Power Supply	DC Input	8V to 35V DC via M12 A-coded	8V to 35V DC via M12 A-coded	8V to 35V DC via M12 A-coded	8V to 35V DC via M12 A-coded
	Ignition Control	Built-in	Built-in	Built-in	Built-in
Environmental	Operating Temperature	-25°C to 60°C (MAXN TDP mode)	-25°C to 60°C (MAXN TDP mode)	-25°C to 70°C (MAXN TDP mode)	-25°C to 70°C (MAXN TDP mode)
	Certification	CE/ FCC	EN 50121-3 CE/ FCC	CE/ FCC	EN 50121-3 CE/ FCC
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Product Lines		NVIDIA® GPU			
Model Name		NRU-120S	NRU-110V	NRU-52S+/ NRU-52S	NRU-51V+/ NRU-51V
Chassis	Dimensions (W x D x H)	230 x 173 x 66 mm	230 x 173 x 66 mm	173 x 144 x 60 mm	173 x 144 x 60 mm
	Weight	2.7 kg	2.7 kg	1.4 kg	1.4 kg
	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	NVIDIA® Jetson AGX Xavier™	NVIDIA® Jetson AGX Xavier™	NVIDIA® Jetson Orin™ NX (NRU-52S+) NVIDIA® Jetson Xavier™ NX (NRU-52S)	NVIDIA® Jetson Orin™ NX (NRU-51V+) NVIDIA® Jetson Xavier™ NX (NRU-51V)
	Chipset	-	-	-	-
	Graphics	-	-	-	-
	Acceleration GPU	-	-	-	-
	Memory	32GB LPDDR4x @ 2133 MHz	32GB LPDDR4x @ 2133 MHz	NRU-52S+: 8GB/ 16GB LPDDR5 @ 3200 MHz NRU-52S: 8GB/ 16GB LPDDR4x @ 1600/ 1866 MHz	NRU-51V+: 8GB/ 16GB LPDDR5 @ 3200 MHz NRU-51V: 8GB/ 16GB LPDDR4x @ 1600/ 1866 MHz
I/O Interface	PoE/ GMSL/ GMSL2	4x IEEE 802.3at (25.5W) GbE PoE+ ports by Intel® I350	8x GMSL ports	IEEE 802.3bt PoE++ for 4GbE ports	4x GMSL2 ports
	Ethernet	4x GbE ports	1x 10GBASE-T by Intel® X550-AT	4x GbE ports	1x 10GBASE-T 10GbE 1x 1GBASE-T 1 GbE
	CAN bus	1x isolated CAN 2.0 port	1x isolated CAN 2.0 port	1x isolated CAN 2.0 port	1x isolated CAN 2.0 port
	Video Port	2x DisplayPort	2x DisplayPort	1x DisplayPort	1x DisplayPort
	Serial Port	1x RS-232	1x RS-232	1x RS-232/422/485	1x RS-232
	USB 2.0	-	-	-	-
	USB 3.2/ USB 3.1	3	3	2	2
	Audio	-	-	-	-
	Digital I/O	1x GPS PPS, 3 DI + 4 DO	1x GPS PPS, 3 DI + 4 DO	1x GPS PPS, 3 DI + 4 DO	1x GPS PPS, 3 DI + 4 DO
Storage Interface	SATA HDD	2x front-accessible 2.5" HDD/SSD	-	-	-
	mSATA	-	-	-	-
	M.2 (M-key)	1	1	-	-
Expansion Bus	Mini PCI-E	1	1	2	2
	M.2 (B-key/ E-Key)	-	-	1x M.2 B-key	1x M.2 B-key
	SIM	1	1	2	2
	MezIO®	-	-	-	-
	PCI/PCI Express	-	-	-	-
Power Supply	DC Input	8V to 35V DC	8V to 35V DC	8V to 35V DC	8V to 35V DC
	Ignition Control	Built-in	Built-in	Built-in	Built-in
Environmental	Operating Temperature	-25°C ~ 50°C (MAX TDP mode) -25°C ~ 70°C (30W TDP mode) -25°C ~ 70°C with optional fan kit (all modes)	-25°C ~ 50°C (MAX TDP mode) -25°C ~ 70°C (30W TDP mode) -25°C ~ 70°C with optional fan kit (all modes)	-25°C ~ 70°C (15W TOP mode with 50W PoE++) -25°C ~ 70°C with optional fan kit (15W TOP mode with 144W PoE++)	-25°C ~ 70°C (15W TOP mode with 50W PoE++) -25°C ~ 70°C with optional fan kit (15W TOP mode with 144W PoE++)
	Certification	CE/ FCC	CE/ FCC	EN50155, CE/ FCC	CE/ FCC
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	Product Lines	NVIDIA® GPU		Surveillance/ Video Analytics	
	Model Name	NRU-154PoE-FT/NRU-156U3-FT	FLYC-300	Nuvo-5608VR	POC-764VR
Chassis	Dimensions (W x D x H)	116 x 171 x 27 mm	124 x 123 x 29.8 mm	240 x 225 x 98 mm	176 x 116 x 68 mm
Chassis	Weight	1.4 kg	0.297 kg	3.5 kg	1.45 kg
Chassis	Chassis Construction	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal	Aluminum alloy with heavy duty metal
System	Processor	NVIDIA® Jetson Orin™ NX	NVIDIA® Jetson Orin™ NX	Intel® Core™ i7-6700/6700TE Intel® Core™ i5-6500/6500TE Intel® Core™ i3-6100/6100TE	Intel® Alder Lake Core™ i3-N305
System	Chipset	-	-	Intel® Q170	-
System	Graphics	-	-	Intel® HD Graphics 530	Intel® UHD Graphics with 32EUs
System	Acceleration GPU	-	-	-	-
System	Memory	8GB/ 16GB LPDDR5 @ 3200 MHz	8GB/ 16GB LPDDR5 @ 3200 MHz	Up to 32 GB DDR4-2133	Up to 16GB DDR5-4800
I/O Interface	PoE/ GMSL/ GMSL2	IEEE 802.3at PoE+ PSE for 4 GbE ports	2x GMSL2 ports	IEEE 802.3at (25.5W) for 8 GbE ports	IEEE 802.3at PoE+ PSE for 4 GbE ports
I/O Interface	Ethernet	1x GbE 4x 2.5GbE ports by Intel® I225 (NRU-154PoE-FT)	1x Gb by NVIDIA® 1x 2.5Gb by Intel® I225-IT	2x GbE by Intel® I219 and I210 8x GbE by Intel® I210	4x GbE by Intel® I350-AM4 1x 2.5GbE by Intel® I226-IT
I/O Interface	CAN bus	-	1x CAN bus 2.0	1x CAN bus 2.0 port	-
I/O Interface	Video Port	1x DisplayPort	1x DisplayPort	1x VGA + DVI-D 2x DisplayPort	1x DP++ 2x HDMI™
I/O Interface	Serial Port	1x RS-232/422/485	-	2x RS-232/422/485 1x RS-232	1x RS-232/422/485 3x 3-wire RS-232 or 1x RS-422/485
I/O Interface	USB 2.0	2x USB 2.0 ports	1	4	-
I/O Interface	USB 3.2/ USB 3.1	2x USB 3.2 Gen2(NRU-156U3-FT) 4x USB 3.2 Gen1(NRU-154PoE-FT)	2	4	4x USB 3.2 Gen2
I/O Interface	Audio	-	-	1x mic-in and speaker-out	-
I/O Interface	Digital I/O	-	Isolated 2 DI + 4 DO	4 DI + 4 DO Polling, COS	4 DI +4 DO
Storage Interface	SATA HDD	-	-	2x 3.5" HDD/ SSD	-
Storage Interface	mSATA	-	-	1 (mux. with mini-PCIe)	-
Storage Interface	M.2 (M-key)	-	1 (Gen4 x4)	-	1
Expansion Bus	Mini PCI-E	2	-	4	2
Expansion Bus	M.2 (B-key/ E-Key)	1x M.2 B-key	1x M.2 B-key	-	-
Expansion Bus	SIM	2	1	4	2
Expansion Bus	MezIO®	-	1	-	-
Expansion Bus	PCI/PCI Express	-	-	-	-
Power Supply	DC Input	12V DC	12V to 60V DC & Supports 4S-14S battery pack	8V to 35V DC	8V to 35V DC
Power Supply	Ignition Control	Built-in	-	Built-in	Built-in
Environmental	Operating Temperature	-25°C ~ 70°C (15W TOP mode with 50W PoE++) -25°C ~ 70°C with optional fan kit (15W TOP mode with 144W PoE++)	-25°C to 70°C	35W CPU -25°C ~ 70°C (with mSATA/ SSD) -10°C ~ 60°C (with 3.5" HDD) 65W CPU -25°C ~ 50°C (with mSATA/ SSD) -10°C ~ 60°C (with 3.5" HDD)	With FAN Kit -10°C ~ 70°C Without FAN Kit -10°C ~ 55°C
Environmental	Certification	CE/ FCC	CE/ FCC, EN62368-1	CE/ FCC	CE/ FCC
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SEMIL




	Product Lines	SEMIL			
	Model Name	SEMIL-2047GC	SEMIL-1748GC	SEMIL-1728GC	SEMIL-1724GC
Chassis	Dimensions (W x D x H)	440 x 310 x 90.5 mm	440 x 310 x 90.5 mm	440 x 310 x 90.5 mm	440 x 310 x 90.5 mm
Chassis	Weight	12 kg	12.2 kg	12.2 kg	12 kg
Chassis	Chassis Construction	Aluminum alloy with stainless steel / waterproof	Aluminum alloy with stainless steel / waterproof	Aluminum alloy with stainless steel / waterproof	Aluminum alloy with stainless steel / waterproof
Chassis	IP Rating	IP69K	IP67	IP67	IP67
System	Processor	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
System	Acceleration GPU	NVIDIA® L4	NVIDIA® L4	NVIDIA® RTX™ A2000	NVIDIA® RTX™ A2000
System	Chipset	Intel® Q670E	Intel® C246	Intel® C246	Intel® C246
System	Graphics	Intel® UHD Graphics 770	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630
System	Memory	Up to 64 GB DDR5 4800	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400
I/O Interface	Ethernet	4x 2.5GbE IEEE 802.3at (25.5W) by Intel® I226-IT (M12 X-coded) 1x GbE by Intel® I219-LM (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 7x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 7x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 3x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)
I/O Interface	10GbE Port	2x 10GbE by X550-AT2 (M12 X-coded)	Optional 1x 10G port (M12 X-coded)	Optional 1x 10G port (M12 X-coded)	Optional 1x 10G port (M12 X-coded)
I/O Interface	CAN bus	2x isolated CAN bus 2.0 port	-	-	-
I/O Interface	Video Port	2x Type-C USB supporting DP	1x VGA (M12 A-coded)	1x VGA (M12 A-coded)	1x VGA (M12 A-coded)
I/O Interface	Serial Port	2x 3-wire RS-232 ports 1x 3-wire RS-232 ports 1x RS-422/485	2x RS-232 ports (M12 A-coded)	2x RS-232 ports (M12 A-coded)	2x RS-232 ports (M12 A-coded)
I/O Interface	USB 2.0	2x USB 2.0 (M12 A-coded)	4x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	4x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)
I/O Interface	USB 3.2/ USB 3.1	2x Type-C USB 3.2 Gen1	-	-	-
I/O Interface	Audio	-	1x mic-in and speaker-out (M12 A-coded)	1x mic-in and speaker-out (M12 A-coded)	-
I/O Interface	Digital I/O	-	-	-	-
Storage Interface	SATA HDD	2x 2.5 HDD/SSD	2x 2.5 HDD/SSD	2x 2.5 HDD/SSD	2x 2.5 HDD/SSD
Storage Interface	mSATA	2	2	2	2
Storage Interface	M.2 (M-key)	1(Gen4 x4)	1(Gen3 x4)	1(Gen3 x4)	1(Gen3 x4)
Expansion Bus	Mini PCI-E	3	4 (mux with mSATA)	4 (mux with mSATA)	2 (mux with mSATA)
Expansion Bus	M.2 (B-key/ E-Key)	1x M.2 B-key 1x M.2 E-key	-	-	-
Expansion Bus	SIM	5	2	2	2
Expansion Bus	MezIO®	-	-	-	-
Expansion Bus	PCI/PCI Express	1x PCIe with NVIDIA® L4 pre-installed	1x PCIe with NVIDIA® L4 pre-installed	1x PCIe with NVIDIA® RTX™ A2000 pre-installed	1x PCIe with NVIDIA® RTX™ A2000 pre-installed
Power Supply	DC Input	8V to 48V DC (M12 L-coded)	8V to 48V DC (M12 S-coded)	8V to 48V DC (M12 S-coded)	8V to 48V DC (M12 S-coded)
Power Supply	Ignition Control	Built-in	Built-in	Built-in	Built-in
Environmental	Operating Temperature	**with 35W CPU** -40°C~ 70°C **with >= 65W CPU** -40°C~70°C (configured as 35W TDP mode) -40°C~ 60°C (configured as 65W TDP mode)	**with 35W CPU** -25°C~ 70°C **with >= 65W CPU** -25°C~70°C (configured as 35W TDP mode) -25°C~ 50°C (configured as 65W TDP mode)	**with 35W CPU** -25°C~ 70°C **with >= 65W CPU** -25°C~70°C (configured as 35W TDP mode) -25°C~ 50°C (configured as 65W TDP mode)	**with 35W CPU** -25°C~ 70°C **with >= 65W CPU** -25°C~70°C (configured as 35W TDP mode) -25°C~ 50°C (configured as 65W TDP mode)
Environmental	Certification	CE/ FCC, MIL-STD-810H	EN 50155, CE/ FCC, MIL-STD-810G	EN 50155, CE/ FCC, MIL-STD-810G	EN 50155, CE/ FCC, MIL-STD-810G
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SEMIL

					
	Product Lines	**SEMIL**			
	Model Name	**SEMIL-2007**	**SEMIL-1704**	**SEMIL-1714J**	**SEMIL-1708**
Chassis	**Dimensions (W x D x H)**	440 x 310 x 90.5 mm	220 x 310 x 90.5 mm	220 x 310 x 90.5 mm	220 x 310 x 90.5 mm
Chassis	**Weight**	6 kg	5.8 kg	6 kg	5.9 kg
Chassis	**Chassis Construction**	Aluminum alloy with stainless steel / waterproof	Aluminum alloy with stainless steel	Aluminum alloy with stainless steel	Aluminum alloy with stainless steel
Chassis	**IP Rating**	IP69K	IP67	IP67	IP67
System	**Processor**	Intel® 14th-Gen Core™ CPU Intel® 13th-Gen Core™ CPU Intel® 12th-Gen Core™, Pentium®, Celeron® CPU	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
System	**Acceleration GPU**	-	-	-	-
System	**Chipset**	Intel® Q670E	Intel® C246	Intel® C246	Intel® C246
System	**Graphics**	Intel® UHD Graphics 770	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630
System	**Memory**	Up to 64 GB DDR5 4800	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400
I/O Interface	**PoE**	4x 2.5GbE IEEE 802.3at (25.5W) by Intel® I226-IT (M12 X-coded) 1x GbE by Intel® I219-LM (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 3x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 3x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 7x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)
I/O Interface	**10GbE Port**	2x 10GbE by X550-AT2 (M12 X-coded)	Optional 1x 10G port (M12 X-coded)	Optional 1x 10G port (M12 X-coded)	Optional 1x 10G port (M12 X-coded)
I/O Interface	**CAN bus**	2x isolated CAN bus 2.0 port	-	-	-
I/O Interface	**Video Port**	2x Type-C USB supporting DP	1x VGA (M12 A-coded)	1x VGA (M12 A-coded)	1x VGA (M12 A-coded)
I/O Interface	**Serial Port**	2x 3-wire RS-232 ports 1x 3-wire RS-232 ports 1x RS-422/485	2x RS-232 ports (M12 A-coded)	2x RS-232 ports (M12 A-coded)	2x RS-232 ports (M12 A-coded)
I/O Interface	**USB 2.0**	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	4x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)
I/O Interface	**USB 3.2/ USB 3.1**	2x Type-C USB 3.2 Gen1	-	-	-
I/O Interface	**Audio**	-	-	-	1x mic-in and speaker-out (M12 A-coded)
I/O Interface	**Digital I/O**	-	-	-	-
I/O Interface	**SATA HDD**	2	2	2	2
Storage Interface	**mSATA**	2	2	2	2
Storage Interface	**M.2 (M-key)**	1(Gen4 x4)	1(Gen3 x4)	1(Gen3 x4)	1(Gen3 x4)
Storage Interface	**Mini PCI-E**	3	2 (mux with mSATA)	2 (mux with mSATA)	4 (mux with mSATA)
Expansion Bus	**M.2 (B-key/ E-Key)**	1x M.2 B-key 1x M.2 E-key	-	-	-
Expansion Bus	**SIM**	5	2	2	2
Expansion Bus	**MezIO®**	-	-	-	-
Expansion Bus	**PCI/PCI Express**	-	-	PB-2500J pre-installed	-
Power Supply	**DC Input**	8 to 48V DC (M12 L-coded)	8 to 48V DC (M12 S-coded)	8 to 48V DC (M12 S-coded)	8 to 48V DC (M12 S-coded)
Power Supply	**Ignition Control**	Built-in	Built-in	Built-in	Built-in
Environmental	**Operating Temperature**	**with 35W CPU** -40°C~ 70°C **with >= 65W CPU** -40°C~70°C (configured as 35W TDP mode) -40°C~ 60°C (configured as 65W TDP mode)	**with 35W CPU** -40°C~ 70°C **with >= 65W CPU** -40°C~70°C (configured as 35W TDP mode) -40°C~ 50°C (configured as 65W TDP mode)	**with 35W CPU** -40°C~ 70°C **with >= 65W CPU** -40°C~70°C (configured as 35W TDP mode) -40°C~ 50°C (configured as 65W TDP mode)	**with 35W CPU** -40°C~ 70°C **with >= 65W CPU** -40°C~70°C (configured as 35W TDP mode) -40°C~ 50°C (configured as 65W TDP mode)
Environmental	**Certification**	CE/ FCC, MIL-STD-810H	EN 50155, CE/ FCC, MIL-STD-810G	EN 50155, CE/ FCC, MIL-STD-810G	EN 50155, CE/ FCC, MIL-STD-810G
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SEMIL

					
	Product Lines	**SEMIL**			
	Model Name	**SEMIL-1718J**	**SEMIL-1321GC**	**SEMIL-1311J**	**SEMIL-1301**
Chassis	**Dimensions (W x D x H)**	220 x 310 x 90.5 mm	440 x 310 x 90.5 mm	220 x 310 x 90.5 mm	220 x 310 x 90.5 mm
Chassis	**Weight**	6.2 kg	12 kg	6 kg	5.8 kg
Chassis	**Chassis Construction**	Aluminum alloy with stainless steel	Aluminum alloy with stainless steel	Aluminum alloy with stainless steel	Aluminum alloy with stainless steel
Chassis	**IP Rating**	IP67	IP4X	IP4X	IP4X
System	**Processor**	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T	Intel® Xeon® E-2176G/ E-2278GE/ E-2278GEL Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
System	**Acceleration GPU**	-	NVIDIA® RTX™ A2000	-	-
System	**Chipset**	Intel® C246	Intel® C246	Intel® C246	Intel® C246
System	**Graphics**	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630
System	**Memory**	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400	Up to 64 GB DDR4-2666/ 2400
I/O Interface	**PoE**	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 7x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 3x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 3x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)	1x IEEE 802.3at (25.5W) by Intel® I219 (M12 X-coded) 3x IEEE 802.3at (25.5W) by Intel® I210 (M12 X-coded)
I/O Interface	**10GbE Port**	Optional 1x 10G port (M12 X-coded)	Optional 1x 10G port (M12 X-coded)	Optional 1x 10G port (M12 X-coded)	Optional 1x 10G port (M12 X-coded)
I/O Interface	**CAN bus**	-	-	-	-
I/O Interface	**Video Port**	1x VGA (M12 A-coded)	1x VGA (M12 A-coded) 1x DisplayPort	1x VGA (M12 A-coded) 1x DisplayPort	1x VGA (M12 A-coded) 1x DisplayPort
I/O Interface	**Serial Port**	2x RS-232 ports (M12 A-coded)	2x RS-232 ports (M12 A-coded) 1x RS-232/422/485 1x RS-232	2x RS-232 ports (M12 A-coded) 1x RS-232/422/485 1x RS-232	2x RS-232 ports (M12 A-coded) 1x RS-232/422/485 1x RS-232
I/O Interface	**USB 2.0**	4x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)
I/O Interface	**USB 3.2/ USB 3.1**	-	3	3	3
I/O Interface	**Audio**	1x mic-in and speaker-out (M12 A-coded)	1x mic-in and speaker-out	1x mic-in and speaker-out	1x mic-in and speaker-out
I/O Interface	**Digital I/O**	-	-	-	-
I/O Interface	**SATA HDD**	2	2	2	2
Storage Interface	**mSATA**	2	2	2	2
Storage Interface	**M.2 (M-key)**	1(Gen3 x4)	1(Gen3 x4)	1(Gen3 x4)	1(Gen3 x4)
Storage Interface	**Mini PCI-E**	4 (mux with mSATA)	2 (mux with mSATA)	2 (mux with mSATA)	2 (mux with mSATA)
Expansion Bus	**M.2 (B-key/ E-Key)**	-	1x M.2 B-key 1x M.2 E-key	1x M.2 B-key 1x M.2 E-key	1x M.2 B-key 1x M.2 E-key
Expansion Bus	**SIM**	2	4	4	4
Expansion Bus	**MezIO®**	-	-	-	-
Expansion Bus	**PCI/PCI Express**	PB-2500J pre-installed	1x PCIe with NVIDIA® RTX™ A2000 pre-installed	PB-2500J pre-installed	-
Power Supply	**DC Input**	8 to 48V DC (M12 S-coded)	8 to 48V DC	8 to 48V DC	8 to 48V DC
Power Supply	**Ignition Control**	Built-in	Built-in	Built-in	Built-in
Environmental	**Operating Temperature**	**with 35W CPU** -40°C~ 70°C **with >= 65W CPU** -40°C~70°C (configured as 35W TDP mode) -40°C~ 50°C (configured as 65W TDP mode)	**with 35W CPU** -25°C~ 70°C **with >= 65W CPU** -25°C~70°C (configured as 35W TDP mode) -25°C~ 50°C (configured as 65W TDP mode)	**with 35W CPU** -40°C ~ 70°C **with >= 65W CPU** -40°C ~ 70°C (configured as 35W TDP mode) -40°C ~ 50°C (configured as 65W TDP mode)	**with 35W CPU** -40°C ~ 70°C **with >= 65W CPU** -40°C ~ 70°C (configured as 35W TDP mode) -40°C ~ 50°C (configured as 65W TDP mode)
Environmental	**Certification**	EN 50155, CE/ FCC, MIL-STD-810G	EN 50155, CE/ FCC, MIL-STD-810G	EN 50155, CE/ FCC, MIL-STD-810G	EN 50155, CE/ FCC, MIL-STD-810G
	Page Number	**P. 242 - 243**	**P. 244 - 245**	**P. 246 - 247**	**P. 246 - 247**

Product Lines		IoT Gateway			
Model Name		IGT-33V	IGT-34C	IGT-30D/31D	IGT-20/ 21/ 22
Chassis	Dimensions (W x D x H)	43 x 77 x 104 mm	43 x 77 x 104 mm	43 x 77 x 104 mm	41 x 77 x 104 mm
	Weight	0.5kg	0.5kg	0.5kg	0.4 kg
	Chassis Construction	Heavy duty metal	Heavy duty metal	Heavy duty metal	Heavy duty metal
System	Processor	TI Sitara AM3352 1 GHz	TI Sitara AM3352 1 GHz	TI Sitara AM3352 1 GHz	TI Sitara AM3352 1 GHz
	Chipset	-	-	-	-
	Graphics	-	-	-	-
	Memory	1GB DDR3L	1GB DDR3L	1GB DDR3L	1GB DDR3L
I/O Interface	PoE	1 x PD port	1 x PD port	1 x PD port	-
	Ethernet	2 x 10/100M Ethernet	2 x 10/100M Ethernet	2 x 10/100M Ethernet	1x 10/100M Ethernet
	Video Port	-	-	-	-
	Serial Port	1x RS-232/422/485 1x RS-485	1x RS-232/422/485 1x RS-485	1x RS-232/422/485	2x RS-232/422/485 (IGT-20/ IGT-21) 1x RS-232 + 1x RS-485 (IGT-22)
	USB 2.0	1	1	1	1
	USB 3.2/ USB 3.1	-	-	-	-
	Audio	-	-	-	-
	CAN bus	-	-	1 (IGT-31D Only)	1 (IGT-21 Only)
	Analog I/O	8 x 16bit 0-10V / ±5V/ ±10V Voltage Input	4 x 16bit 4-20mA/ 0-20mA Current Input	-	-
	Digital I/O	2 DI + 6 DO	2 DI + 6 DO	8 DI + 2 DO	4 DI + 4 DO (IGT-20/ IGT-21) 8DI + 8DO (IGT-22)
Storage Interface	SATA HDD	-	-	-	-
	mSATA	-	-	-	-
	CFast / MicroSD	2x MicroSD	2x MicroSD	2x MicroSD	2x MicroSD
	SIM	1	1	1	1
Expansion Bus	Mini PCI-E	1	1	1	1
	M.2	-	-	-	-
	MezIO®	-	-	-	-
	PCI/PCI Express	-	-	-	-
Power Supply	DC Input	12V to 25V DC	12V to 25V DC	12V to 25V DC	8V to 25V DC
	Ignition Control	-	-	-	-
Environmental	Operating Temperature	-25°C ~ 70°C	-25°C ~ 70°C	-25°C ~ 70°C	-25°C ~ 70°C
	Certification	CE/ FCC	CE/ FCC	CE/ FCC	CE/ FCC
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	RJ-45				
Model Name	PCIe-PoE572bt	PCIe-N572	PCIe-PoE550X	PCIe-PoE454at	PCIe-N452
Dimensions (W x H)	Low-Profile bracket: 168mm x 69mm Standard-Height bracket: 168mm x 111mm		168mm x 111mm		
Bus Interface	x4, Gen3 PCI Express				
Number of Ports	2x 10GbE ports by Broadcom BCM57416 controller	-	2x 10 GbE ports by Intel® X550-AT2 controller	4x 5GbE ports by four Marvel AQC111C 5G controllers	2x 5GbE ports by four Marvel AQC111C 5G controllers
Ethernet Bandwidth	10 Gb/s			5 Gb/s	
PoE Capability	Yes (max 90W output on a single PoE++)	-	Yes (up to 25.5 W of power per port)		-
EMC*	CE/FCC Class B, according to EN 55032 & EN 55035		CE/FCC Class A, according to EN 55032 & EN 55035		
Operating Temperature	-25°C to 70°C rugged operation with airflow	-25°C to 70°C fanless operation with airflow	0°C ~ 60°C with air flow	0°C ~ 55°C with airflow	
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	RJ45				M12	USB
Model Name	PCIe-PoE425bt	PCIe-PoE334LP	PCIe-PoE354at	PCIe-PoE352at	PCIe-PoE312M	PCIe-USB381F
Dimensions (W x H)	168mm x 111mm	168 mm x 69 mm	168 mm x 111 mm		168mm x 111mm	117.7 mm x 111.2 mm
Bus Interface	x4, Gen2 PCI Express					
Number of Ports	4x 2.5GbE ports by Intel® I226-IT	4x GigE ports by Intel® I350-AM4	4x GigE ports by Intel® I350-AM4	2x GigE ports by Intel® I350-AM2	4x ports by Intel® I350-AM4 NIC	8x USB 3.1 Gen1 ports
Ethernet Bandwidth	2.5 Gb/s	1 Gb/s			1 Gb/s	5 Gb/s
PoE Capability	Yes (max 90W output on a single PoE++)	Yes (up to 25.5 W of power per port)			-	-
USB3 Host Controller	-				-	4x Fresco FL1100SX host controllers, compliant with Intel® xHCI Specification Revision 1.0
Per-Port Current Limit	-				-	User-configurable 900mA/ 1800mA per-port current limit
EMC*	CE/FCC Class A, according to EN 55032 & EN 55035					
Operating Temperature	0°C ~ 50°C with airflow (802.3bt mode) 0°C ~ 55°C with airflow (802.3bt mode)	0°C ~ 55°C with air flow			0°C ~ 55°C with air flow	0 ~ 60°C with airflow
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Product Lines

Rugged Embedded

Nuvo-11000 Series

Intel® Core™ Ultra 200 Series Fanless Embedded Computer with 2.5GbE/ GbE, USB 3.2, 8-CH DIO, optional 10GbE and Expansion Cassette & MezIO® Interface

Key Features

- **Supports Intel® Core™ Ultra 200 Series 24C/ 24T 35W/ 65W LGA1851 CPU**
- **Rugged, -25°C to 70°C fanless operation**
- **Up to 5x 2.5GbE and 1x GigE ports with optional PoE+, supporting 9.5 KB jumbo frame**
- **Up to 8x USB 3.2 Gen2 ports**
- **4-CH isolated DI and 4-CH isolated DO**
- **1x optional 10GBASE-T Ethernet**
- **Expansion Cassette for PCIe add-on card accommodation**
- **MezIO® interface for easy function expansion**

CE FC

Introduction

Nuvo-11000 series is Neousys' flagship rugged embedded computer built on the Intel® Core™ Ultra 200 series platform. Powered by TSMC's advanced 3nm photolithography, the latest Core™ Ultra 200 processors offer up to 24 cores/ 24 threads with higher CPU clock rates, and an integrated neural processing unit (NPU) for AI acceleration. This results in a 1.2x boost in CPU performance and AI computing capabilities of up to 36 TOPs. Combined with DDR5-6400 memory and PCIe Gen5 support, it delivers a significant improvement in computing power, enhancing performance across diverse industrial applications.

Nuvo-11000 series provides comprehensive I/O capabilities for industrial applications. It includes five 2.5Gb and a 1Gb Ethernet ports with optional PoE+ capability, one optional 10GbE port for high-speed data transfer or 10Gb industrial camera, and eight USB 3.2 Gen2 ports for USB3 cameras. Additionally, an upgraded M.2 Gen5x4 slot supports the latest NVMe SSDs, achieving read/ write speeds over 11,000 MB/s and the system also features 4x isolated DI and 4x isolated DO for automation and machine vision applications.

For extended functionality, the series supports add-on cards via its expansion Cassette, proprietary MezIO® interface, and internal mini-PCIe slots, ensuring adaptability to diverse application requirements.

The advanced Intel® Core™ Ultra 200 processors also bring better energy efficiency to the Nuvo-11000 platform. Compared to the previous generation, they can deliver nearly 120% the performance while consuming only 80% of the power*. Combing a proven thermal design with versatile I/O functions, Nuvo-11000 offers a rugged, high-performance embedded computing solution tailored for a wide range of industrial applications.

** Benchmarked using PassMark PerformanceTest.*

Specifications

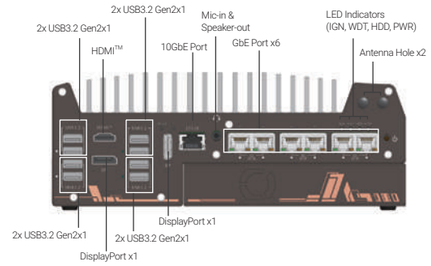
System Core	
Processor	Supports Intel® Core™ Ultra 200 series CPU (LGA 1851 socket), 35W and 65W TDP - Intel® Core™ Ultra 9 285/285T - Intel® Core™ Ultra 7 265/265T - Intel® Core™ Ultra 5 245/245T/225/225T
Chipset	Intel® H810/ Q870 Platform Controller Hub
Graphics	Integrated Intel Xᵉ LPG Graphics
AI Engine	Integrated neural processing unit
Memory	Up to 96 GB non-ECC DDR5 6400 SDRAM (Dual SODIMM slots)
AMT	Supports Intel vPro/ AMT 16.0
TPM	Supports dTPM 2.0
I/O Interface	
Ethernet	1x 2.5G Ethernet by I226-IT and 1x Gigabit Ethernet by I219-LM (Nuvo-11002E/LP) with screw-lock 5x 2.5G Ethernet by I226-IT and 1x Gigabit Ethernet by I219-LM (Nuvo-11006E/DE/LP) with screw-lock 1x optional 10GBASE-T Ethernet (Nuvo-11006E/ DE/ LP)
PoE+	Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6 100 W total power budget
USB	8x USB 3.2 Gen2 ports (Nuvo-11006LP/E/DE) 2x USB 3.2 Gen2, 2x USB3.2 Gen1 and 4x USB2.0 ports (Nuvo-11002LP/E)
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Video Port	1x HDMI™, supporting 3840 x 2160 resolution 2x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ 2) 2x 3-wire RS-232 ports (COM3/ 4)
Audio	1x 3.5 mm jack for mic-in and speaker-out
I/O Interface	
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen5x4) for NVMe SSD (Nuvo-11006E/DE/LP)
SATA HDD	2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1(Nuvo-11000E/11000DE) 1x hot-swappable 2.5" HDD tray (7mm HDD/ SSD) and 1x internal 2.5" SATA port, supporting RAID 0/ 1 (Nuvo-11000LP)

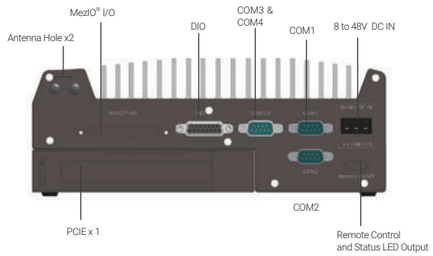
Internal Expansion Bus	
PCI Express	1x PCIe x16 slot@Gen4, 16-lanes PCIe signals in Cassette (Nuvo-11002E/ 11006E) 2x PCIe x16 slots@Gen4, 8-lanes PCIe signals in Cassette (11006DE)
Mini PCI Express	2x full-size mini PCI Express socket
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 48VDC DC input (V+/ GND/ IGN)
Remote Ctrl. & LED 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 90 mm (H) (Nuvo-11000E series) 240 mm (W) x 225 mm (D) x 110.5 mm (H) (Nuvo-11000DE series) 240 mm (W) x 225 mm (D) x 79 mm (H) (Nuvo-11000LP series)
Weight	3.58 kg (Nuvo-11000E Series)/ 3.89 kg (Nuvo-11000DE series) 3.36 kg (Nuvo-11000LP series)
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	With 35W CPU -25°C to 70°C* With 65W CPU -25°C to 70°C* (configured as 35W TDP) -25°C to 50°C* (configured as 65W TDP)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

** For sub-zero and over 60°C operating temperature, a wide temperature HDD/ SSD/ NVMe is required.*

Last updated: 18 - Feb 2025

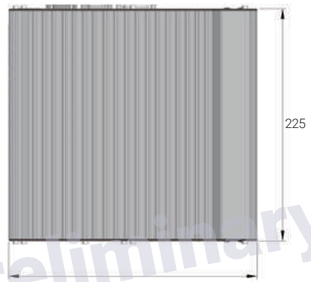
Appearance

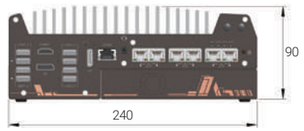




Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-11002E	Intel® Core™ Ultra 200 Series Rugged Embedded Computer with 2x 2.5GbE/GbE, USB 3.2, single-slot PCIe Cassette & MezIO® Interface
Nuvo-11006E	Intel® Core™ Ultra 200 Series Rugged Embedded Computer with 6x 2.5GbE/GbE, USB 3.2, single-slot PCIe Cassette & MezIO® Interface
Nuvo-11006DE	Intel® Core™ Ultra 200 Series Rugged Embedded Computer with 6x 2.5GbE/GbE, USB 3.2, dual-slot PCIe Cassette & MezIO® Interface
Nuvo-11002LP	Intel® Core™ Ultra 200 Series Rugged Embedded Computer with 2x 2.5GbE/GbE, USB 3.2, MezIO™ Interface & 2.5" HDD tray
Nuvo-11006LP	Intel® Core™ Ultra 200 Series Rugged Embedded Computer with 6x 2.5GbE/GbE, USB 3.2, MezIO™ Interface & 2.5" HDD tray
PoE+ Option	Option of 802.3at PoE+ PSE for 2.5GbE port 3 to port 6
10G Ethernet Option	Option of 10GBASE-T Ethernet port

Optional Accessories

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)
PA-600W-ENC	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)
Dmpbr-Nuvo5000_7000	Neousys' patented damping brackets assembly for Nuvo-11000 series
DINRAIL-O	DIN-rail mount assembly for Nuvo-11000 series

MezIO® Modules

MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	*MezIO®-V20-EP*	MezIO® module with ignition power control function for in-vehicle application
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	*MezIO®-U4*	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	*MezIO®-G4*	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	*MezIO®-G4P*	MezIO® module with 4x IEEE 802.3at PoE+ ports *Only Nuvo-11006LP/E/DE-PoE support MezIO-G4P*
MezIO®-D330	MezIO® module with 16-CH isolated DI and 16-CH isolated DO MezIO® module		

Nuvo-11531/ Nuvo-11588

Intel® Core™ Ultra 200 Compact Fanless Computer with 4x PoE+ 2.5GbE, 4x USB 3.2, 1x Easy-Swappable 2.5" SSD Tray, and 1x External SlimSAS Connector

CE FC

Key Features

- **212 x 165 x 63 mm low-profile design**
- **Intel® Core™ Ultra 200 series 35W/ 65W LGA1851 CPU**
- **Rugged, -25°C to 60°C fanless operation**
- **Up to 48GB DDR5 6400 memory**
- **4x 2.5GbE with optional PoE+ and 4x USB3.2 Gen1 with screw-lock**
- **1x M.2 2280 Gen4x4 NVMe and 1x swappable 2.5" SSD tray for storage**
- **1x PCIe Gen4x8 via SlimSAS 8i (SFF-8654) connector (Nuvo-11588 only)**
- **8V to 48V wide-range DC input with optional ignition power control**

Introduction

The Nuvo-11531 is one of the most compact fanless embedded AI computers powered by the Intel® Core™ Ultra 200 series. Its low-profile 212 x 165 x 63 mm footprint makes it ideal for constrained spaces, including robotic arms, AMRs, machine vision systems, and roadside cabinets.

Despite its compact size, the Nuvo-11531 does not compromise on performance. Leveraging TSMC's advanced 3nm process, Intel® Core™ Ultra 200 processors can offer nearly 120% the performance while consuming only 80% of the power*. Furthermore, with the new NPU and integrated GPU, Intel® Core™ Ultra 200 processors deliver up to 36 TOPS, enhancing AI inspection capabilities for existing rule-based computer vision algorithms.

Designed for diverse edge applications—such as machine vision, AMRs, and smart automation—the Nuvo-11531 offers versatile sensor connections. It features four PoE+ 2.5GbE ports and four USB 3.2 Gen1 ports for industrial/ security cameras or LiDAR, along with multiple isolated DIO and dual COM ports for communication with external devices. Internally, it includes one M.2 E-key slot for Wi-Fi modules and two mPCIe slots for flexible I/O expansion, supporting 5G/4G modules, COM ports, CAN bus, or additional GbE ports. For data storage, it provides an internal Gen4x4 M.2 NVMe slot for the OS and an easy-swappable 2.5" SSD tray for data logging. The wide DC input and optional ignition power control are ideal for battery-powered applications, such as robotics and in-vehicle usage. Additionally, the Nuvo-11588 variant features a SlimSAS connector with PCIe Gen4x8 bandwidth for external NVMe, U.2 storage, industrial PCIe cameras, or GPUs.

As compact embedded computers, the Nuvo-11531 and Nuvo-11588 deliver exceptional computing performance and extensive I/O connectivity. They are well-suited for various industrial and edge applications, including smart factories, autonomous logistics, smart cities, and robotics—particularly where installation space is limited.

**Benchmarked using PassMark PerformanceTest.*

Specifications

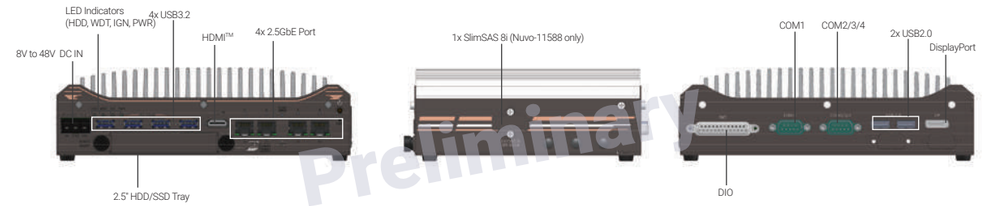
	Nuvo-11531	Nuvo-11588
System Core		
Processor	Supports Intel® Core™ Ultra 200 CPU (LGA1851 socket, 65W/ 35W TDP)	
Chipset	Intel® H810 platform controller hub	Intel® Q870 platform controller hub
Graphics	Integrated Intel X® Graphics (Up to 64EU)	
Memory	Up to 48GB DDR5 6400 memory via one SODIMM slot	
TPM	fTPM 2.0 (standard) / dTPM 2.0 (optional)	
Panel I/O Interface		
Ethernet	4x 2.5GBASE-T Ethernet ports with screw-lock by Intel® I226 GbE controllers. Port 4 supports Wake-on-LAN (WOL)	
PoE+	Optional IEEE 802.3at PoE+ PSE for 4x 2.5GbE ports (100W total power budget)	
External PCIe Connector	-	1x PCIe Gen4x8 via SlimSAS 8i (SFF-8654) connector
USB	4x USB 3.2 Gen1 (5 Gbps) ports with screw-lock 2x USB 2.0 ports	
Video Port (Integrated Graphics)	1x HDMI™, supporting 4096 x 2160 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	1x software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/ 3/ 4) or 1x RS-422/ 485 port (COM2)	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	8-CH isolated DI and 8-CH isolated DO
Internal Expansion Bus		
Mini PCI Express	2x full-size mini PCI Express sockets with internal SIM sockets	
M.2 E	1x M.2 2230 E key socket for WiFi module	

	Nuvo-11531	Nuvo-11588
Storage Interface		
SATA HDD	1x easy-swappable 2.5" HDD/ SSD tray for 7mm HDD/ SSD	
M.2 M	1x M.2 2280 M key socket (PCIe Gen4x4) for NVMe SSD	
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8V to 48V DC input with optional ignition power control [1]	
Mechanical		
Dimension	212 mm (W) x 165 mm (D) x 63 mm (H)	
Weight	TBD	
Mounting	Wall-mount (standard) or DIN-rail mount (optional)	
Environmental		
Operating Temperature	With 35W CPU -25°C to 60°C [2] With 65W CPU (installation of the optional fan kit is recommended) -25°C to 60°C [2]/[3]	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90%, non-condensing	
Vibration	MIL-STD-810H, Method 514.8, Category 4	
Shock	MIL-STD-810H, Method 516.8, Procedure I	
EMC	CE/FCC Class A, according to EN 55032 & EN 55035	

[1] The maximum input current for each pin is 20A
[2] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[3] For 65W CPUs, the optional fan kit is recommended for operating at ambient temperatures higher than 50°C.

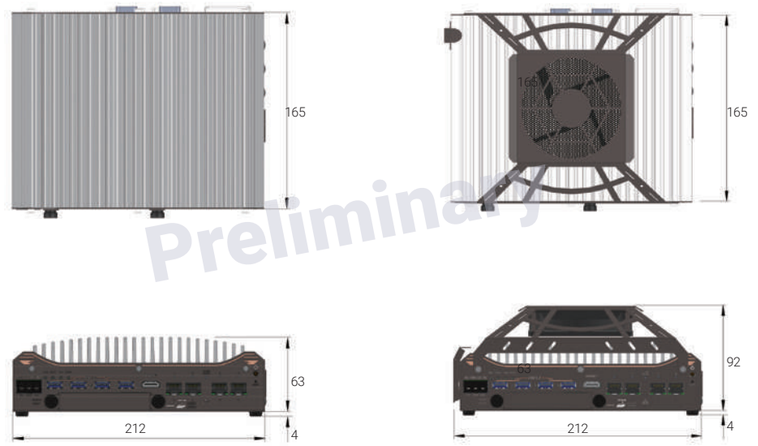
Last updated: 19 - Feb 2025

Appearance



Dimensions

Unit : mm



Nuvo-11531/11588

Nuvo-11531/11588 with Fan Kit

Ordering Information

Model No.	Product Description
Nuvo-11588-PoE	Intel® Core™ Ultra 200 compact fanless computer featuring 4x PoE+ 2.5GbE, 4x USB 3.2, 1x easy-swappable 2.5" SSD tray and 1x external SlimSAS connector
Nuvo-11531-PoE	Intel® Core™ Ultra 200 compact fanless computer featuring 4x PoE+ 2.5GbE, 4x USB 3.2, 1x easy-swappable 2.5" SSD tray
Nuvo-11531	Intel® Core™ Ultra 200 compact fanless computer featuring 4x 2.5GbE, 4x USB 3.2, 1x easy-swappable 2.5" SSD tray
Optional ignition power control	

Optional Accessories

DINRAIL-11531	DIN-rail mounting assembly for Nuvo-11588/ Nuvo-11531/ Nuvo-11501 series
AccsyBx-FAN-Nuvo11531	Fan kit with 92mm x 92mm fan for Nuvo-11588/ Nuvo-11531/ Nuvo-11501 series

Nuvo-9000 Series

Intel® 14th/13th/12th-Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, Patented Cassette & MezIO® Interface

Key Features

- **Supports Intel® 14th/13th/12th-Gen Core™ 24C/ 32T 35W/ 65W CPU**
- **Patented Cassette for PCI/PCIe add-on card accommodation**
- **Rugged, -25°C to 70°C fanless operation**
- **Up to 5x 2.5GbE and 1x GigE ports with optional PoE+, supporting 9.5 KB jumbo frame**
- **1x USB 3.2 Gen2x2 type-C and 8x USB 3.2/ 2.0 type-A ports**
- **Supports M.2 Gen4x4 NVMe and 2x SATA ports**
- **MezIO® interface for easy function expansion**
- **VGA/ DVI/ DP triple independent display, supporting 4K2K resolution**

**R.O.C Patent No. M456527*

Introduction

Nuvo-9000 series is Neousys' new rugged embedded computer based on Intel® 14th/13th/12th-Gen platform. Benefiting from cutting-edge Intel® 7 photolithography, the latest Core™ desktop processor comes with up to 24 cores and 32 threads and presents an incredible boost of computational performance. Combining the increase of DDR5 memory bandwidth and PCIe Gen4 NVMe high-speed disk read/write, users can expect an overall system performance improvement of up to 2x when compared to previous 10th or 11th- Gen platforms.

Nuvo-9000 series inherits Neousys' patented expansion Cassette design to provide great versatility by allowing additional installation of PCIe or PCI add-on cards. There are three expansion Cassette options available for Nuvo-9000 series, the Nuvo-9000E features a single x16 Gen3 PCIe slot; Nuvo-9000DE has dual x16 PCIe slots, and Nuvo-9000P has a single PCI slot. For users who need more flexible storage, Nuvo-9000LP has a 2.5" HDD tray instead of an expansion Cassette to support a hot-swappable 2.5" HDD/SSD.

I/O functions are also comprehensively enhanced. In addition to six 2,5G and Gigabit Ethernet ports with PoE+ PSE option, Nuvo-9000 series features a USB 3.2 Gen2x2 type-C port offering 20 Gbps bandwidth for data exchange with external devices, plus another six USB 3.2 type-A ports for USB3 camera connectivity. It also has an upgraded M.2 Gen4x4 slot to support the latest NVMe SSD to boost disk read/write speed up to 7000 MB/s. For unfulfilled I/O requirements, users can utilize the expansion Cassette to add on function-specific PCIe/ PCI card, the proprietary MezIO® interface, and internal mini-PCIe/M.2 interfaces.

With its field-proven thermal design, significant CPU and I/O upgrades, and multiple expansion methods, the Neousys Nuvo-9000 series fits your need for ruggedness, performance, and versatility for a variety of applications.

Specifications

System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU[1] (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
Chipset	Intel® Q670E platform controller hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)	
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel® vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet Port[2]	1x 2.5G Ethernet by I226-IT/ I225-IT and 1x Gigabit Ethernet by I219-LM (Nuvo-9002E/ P/ DE/ LP) with screw-lock 5x 2.5G Ethernet by I226-IT/ 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	
USB 3.2	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	
USB 2.0	2x USB 2.0 ports	
Video Port (Integrated Graphics)	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Storage Interface		
SATA HDD	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, supporting RAID 0/ 1 (Nuvo-9000LP)	
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen4x4) for NVMe SSD	

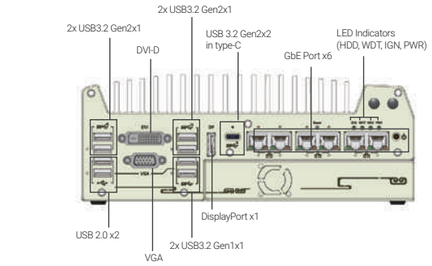
Internal Expansion Bus	
PCI/PCI Express	1x PCIe x16 slot@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-9002E/ 9006E) 2x PCIe x16 slots@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-9002DE/ 9006DE) 1x PCI slot in Cassette (Nuvo-9002P/ 9006P)
Mini PCI Express	1x full-size mini PCI Express socket
M.2	1x M.2 2242/3052 B key socket with SIM slot for M.2 5G/ 4G module
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 48V DC input 1x 3-pin pluggable terminal block for 24V DC input (UL series)
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output (Ctrl_In/ GND/ LED_Out)
Mechanical	
Dimension	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 [3] **with 65W CPU** -25°C ~ 70°C [3][4] (configured as 35W TDP) -25°C ~ 50°C [3][4] (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
EMC	CE/FCC Class A, according to EN 55032 & EN 55035
Safety	UL 62368-1, IEC62368-1 (UL series only)

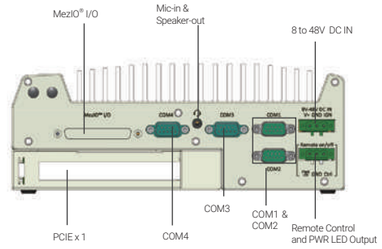
[1] A BIOS update may be required for the system to recognize 13th-Gen processors. Please contact Neousys Technology for more information.
[2] Due to I225-IT specification limitation, for systems running 2.5G Ethernet link speeds, please limit the operating temperature to 60°C.
[3] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[4] 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.

Last updated: 29 - Aug 2024

Appearance

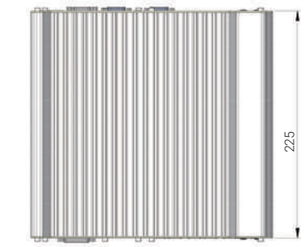
Nuvo-9000E/P

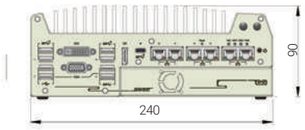




Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9002E	Intel® 14th/ 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® 14th/ 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® 14th/ 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® 14th/ 13th/12th -Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCI Cassette & MezIO® Interface
Nuvo-9002E-UL	Intel® 14th/ 13th/12th-Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCIe Cassette, MezIO® Interface & UL certified
Nuvo-9002P-UL	Intel® 14th/ 13th/12th-Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCI Cassette, MezIO® Interface & UL certified
Nuvo-9006E-UL	Intel® 14th/ 13th/12th -Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCIe Cassette, MezIO® Interface & UL certified
Nuvo-9006P-UL	Intel® 14th/ 13th/12th -Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCI Cassette, MezIO® Interface & UL certified
PoE+ Option	Option of 802.3at PoE+ PSE for 2.5GbE port 3 ~ port 6

Optional Accessories

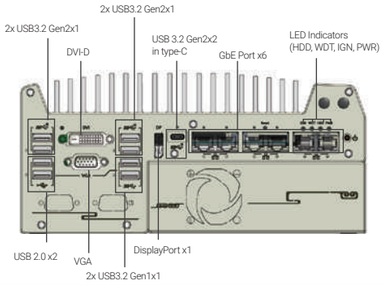
DINRAIL-O	DIN-rail mount assembly for Nuvo-9000 series
Dmpbr-Nuvo5000_7000	Neousys' patented damping brackets assembly for Nuvo-9000 Series
Fankit-25	Fan assembly for 1-slot Cassette, 25x25x10 mm
PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating 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)

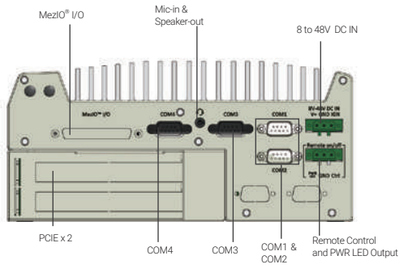
MezIO® Modules

MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	MezIO®-V20-EP	MezIO® module with ignition power control function for in-vehicle application
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	MezIO®-U4	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	MezIO®-G4	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	MezIO®-G4P	MezIO® module with 4x IEEE 802.3at PoE+ ports *Only Nuvo-9006E/P-PoE support MezIO-G4P*

Appearance

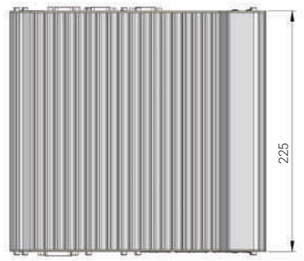
Nuvo-9000DE

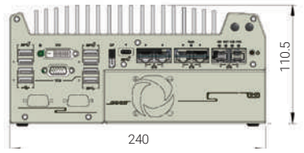




Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9002DE	Intel® 14th/ 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® 14th/ 13th/12th -Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, dual-slot PCIe Cassette & MezIO® Interface
Nuvo-9002DE-UL	Intel® 14th/ 13th/12th -Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, dual-slot PCIe Cassette, MezIO® Interface & UL certified
Nuvo-9006DE-UL	Intel® 14th/ 13th/12th -Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, dual-slot PCIe Cassette, MezIO® Interface & UL certified
PoE+ Option	Option of 802.3at PoE+ PSE for 2.5GbE port 3 ~ port 6

Optional Accessories

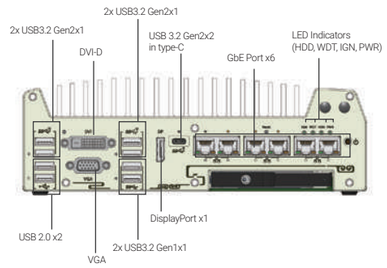
DINRAIL-O	DIN-rail mount assembly for Nuvo-9000 series
Dmpbr-Nuvo5000_7000	Neousys' patented damping brackets assembly for Nuvo-9000 Series
PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30°C to 70°C. (recommended for 35W CPU)
PA-280W-ET2	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)

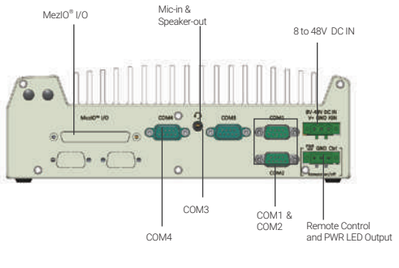
MezIO® Modules

MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	***MezIO®-V20-EP***	MezIO® module with ignition power control function for in-vehicle application
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	***MezIO®-U4***	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	***MezIO®-G4***	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	***MezIO®-G4P***	MezIO® module with 4x IEEE 802.3at PoE+ ports *Only Nuvo-9006DE-PoE support MezIO-G4P*

Appearance

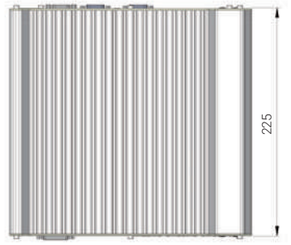
Nuvo-9000LP

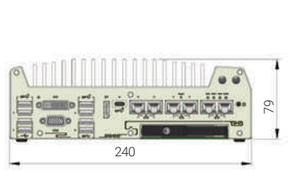




Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9002LP	Intel® 14th/ 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® 14th/ 13th/12th-Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, MezIO® Interface & 2.5" HDD tray
Nuvo-9002LP-UL	Intel® 14th/ 13th/12th-Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, MezIO® Interface, 2.5" HDD tray & UL certified
Nuvo-9006LP-UL	Intel® 14th/ 13th/12th-Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, MezIO® Interface, 2.5" HDD tray & UL certified
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® Modules

MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	***MezIO®-V20***	MezIO® module with 16-mode ignition power control and 1x mini-PCIe socket for in-vehicle usage
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	***MezIO®-U4***	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	***MezIO®-G4***	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	***MezIO®-G4P***	MezIO® module with 4x IEEE 802.3at PoE+ ports *Only Nuvo-9006LP-PoE support MezIO-G4P*

Nuvo-9650AWP Series

Affordable IP66 Waterproof Computer with Intel® 14th/13th/ 12th-Gen Core™ CPU, 4x M12 PoE+ and Dual-mode Type-C DisplayPort/ USB3 Port

Key Features

- **Intel® 14th/13th /12th-Gen Core™ 24C/ 32T 35W/ 65W CPU**
- **Affordable IP66-rated design for waterproof and dustproof**
- **Up to 96GB DDR5 4800 SODIMM**
- **-25°C to 70°C wide-temperature fanless operation**
- **3x 2.5Gb and 1x Gb Ethernet ports via M12 X-coded connectors, with 802.3at PoE+ option**
- **1x waterproof USB3.2 Type-C port supporting alternative mode for DisplayPort and USB3.2 dual output**
- **8V to 48V DC input with built-in ignition power control**

CE FC

Introduction

Nuvo-9650AWP is a cost-effective IP66 waterproof computer with Intel® 14th/3th/12th-Gen Core™ processor designed for harsh and demanding environments. Thanks to its streamlined waterproof chassis and standardized cable kit, Nuvo-9650AWP redefines affordable total cost of ownership (TCO) for industrial computing with significant enhancements including ruggedness against extended operating temperature, intensive shock and vibration, dust, humidity and salinity.

Nuvo-9650AWP offers abundant I/O functionality for generic application requirements, including multiple 2.5GbE/ GbE, USB 2.0 and isolated RS-232 and RS-422/485 ports, all through waterproof M12 connectors. It also has a specialized waterproof type-C connector supporting Type-C alternative mode, or it can enable both 5 Gbps USB3 data transmission speed and 4K DisplayPort video output via a Type-C hub. Moreover, Nuvo-9650AWP is equipped with 8-48V wide-range DC input with ignition power control, and is compliant with MIL-STD-810H shock/ vibration certification for in-vehicle installation, such as mining trucks and farming vehicles.

The integration of IP66 waterproof capability with embedded computer eliminates environmental limitations where exposure to dust or liquids may be of concern. Its affordable waterproof design further reduces the gap in TCO for budget-conscious projects which is defining a new category of embedded computer that strikes a sweetspot between ruggedness performance and cost.

Specifications

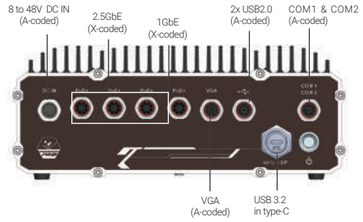
System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU (LGA1700 socket, 65W/ 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® H610E platform controller hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)	
Memory	Up to 96 GB DDR5 4800 SDRAM (two SODIMM slots)	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM (M12 X-coded) 3x 2.5G Ethernet ports by Intel® I226-IT (M12 X-coded)	
PoE+	Optional IEEE 802.3at PoE+ PSE for 4x 2.5GbE/GbE ports 100 W total power budget	
USB 3.2	1x USB 3.2 Gen1 (5 Gbps) port in type-C waterproof connector 1x reserved USB 3.2 Gen1 type-A connector (rear side)	
USB 2.0	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	
Video Port (Integrated Graphics)	1x DisplayPort in type-C waterproof connector, supporting 4096 x 2304 resolution 1x VGA (M12 A-coded), supporting 1920 x 1200 resolution 1x reserved DisplayPort, supporting 4096 x 2304 resolution (rear side)	
Serial Port	1x isolated RS-232 port (COM1) 1x isolated RS-422/485 ports (COM2) via M12 A-coded, 8-pin connector	

Storage Interface	
SATA HDD	2x Internal SATA port for 2.5" HDD/ SSD installation
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD
Internal Expansion Bus	
Mini PCI Express	2x full-size mini PCI Express socket (PCIe + USB2)
M.2 B key	1x M.2 2242/3052 B key socket with SIM slot for M.2 5G/ 4G module
Power Supply	
DC Input	8V to 48V DC input with built-in ignition power control
Mechanical	
Dimension	225mm (W) x 286mm (D) x 90mm (H)
Weight	5.25 kg
Mounting	wall-mounting (Optional)
Environmental	
Operating Temperature	Operating Temperature with 35W CPU -25°C to 70°C* with 65W CPU -25°C to 70°C* (configured as 35W TDP mode) -25°C to 50°C* (configured as 65W TDP mode)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

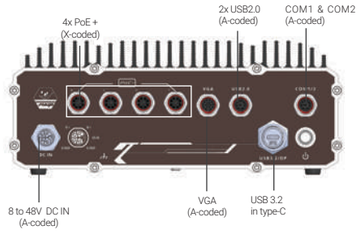
** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Last updated: 11 - Spe 2024

Appearance



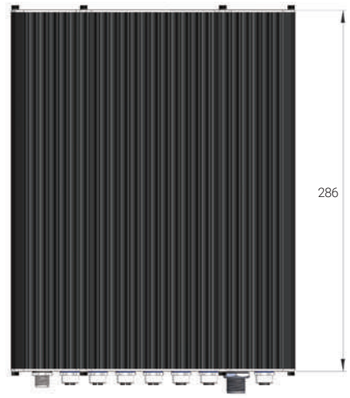
Nuvo-9650AWP

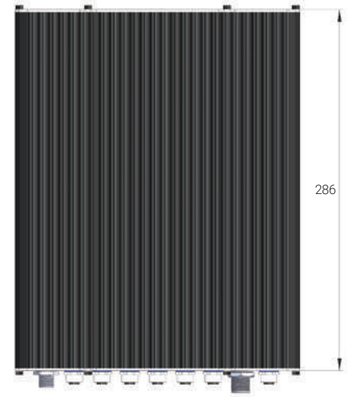


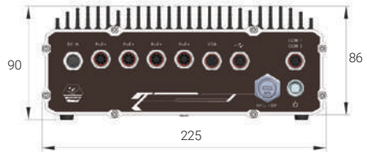
Nuvo-9650AWP-PoE

Dimensions

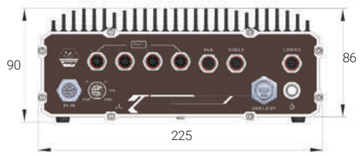
Unit : mm







Nuvo-9650AWP



Nuvo-9650AWP-PoE

Ordering Information

Model No.	Product Description
Nuvo-9650AWP	Affordable IP66 waterproof Intel® 14th/13th/12th-Gen Core™ computer with 4x 2.5GbE/GbE and USB3.2 Type-C ports supporting DP display
Nuvo-9650AWP-PoE	Affordable IP66 waterproof Intel® 14th/13th/12th-Gen Core™ computer with 4x M12 PoE+ and USB3.2 Type-C ports supporting DP display

Optional Accessories

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-CW6P-2P	280W AC-DC power adapter 24V 11.67A, 85 to 264VAC, -30 to +70°C w/ Wafer FML6P to 2P End Terminal cable for AWP/ SEMIL (recommended for 65W CPU or 35W CPU with PoE+ option)
Cblkit-M12-Nuvo-9650AWP	Nuvo-9650AWP M12 cable kit, including 4x Cbl-M12X8M-RJ45F-100CM, 1x Cbl-M12A8M-2U2TA-180CM1, 1x Cbl-M12A17M-VGA-180CM2, 1x Cbl-M12A8M-2DB9M-180CM, 1x Cbl-M12A5F-OW3-180CM
Cblkit-M12-Nuvo-9650AWP-PoE	Nuvo-9650AWP-PoE M12 cable kit, including 4x Cbl-M12X8M-RJ45F-100CM, 1x Cbl-M12A8M-2U2TA-180CM1, 1x Cbl-M12A17M-VGA-180CM2, 1x Cbl-M12A8M-2DB9M-180CM, 1x Cbl-M12L5F-OW5-180CM
Cbl-TpCPlug-DPM-1M	TypeC Male Plug to DP Male Cable, Length : 1M
Cbl-TpCPlug-U3TA-50CM	TypeC Male Plug to USB3.0 Type-A FML, Length: 50CM
Cbl-TpCPlug-UTpCF-50CM	TypeC Male Plug to USB Type-C FML Cable, Length : 50CM
Wmkit-Nuvo9650AWP	Wall mounting assembly for Nuvo-9650AWP

Nuvo-9531 Series

Intel® 14th/13th/12th -Gen Core™ i9/ i7/ i5/ i3 Compact FanlessComputer with 4x 2.5GbE, 4x USB3.2 and 1x Hot-swappable HDD Tray

Key Features

- **212 x 165 x 63 mm low-profile design**
- **Intel® 14th/13th/12th -Gen Core™ 35W/ 65W LGA1700 CPU**
- **Rugged, -25°C to 60°C fanless operation**
- **4x 2.5GbE with optional PoE+ and 4x USB3.2 Gen 1 with screw-lock**
- **M.2 2280 Gen4x4 NVMe and 1x hot-swappable HDD tray for storage**
- **4-CH isolated DI and 4-CH isolated DO**
- **VGA + DP dual display outputs**
- **Optional ignition power control**

Introduction

Nuvo-9531 is one of the most compact fanless embedded computers based on the Intel® 14th/13th/12th-Gen platform. Measuring just 212 x 165 x 63 mm, it can fit into restricted spaces, such as in robotic arm and AMR applications. Despite its compact size, Nuvo-9531 does not compromise on performance. Built on the advanced Intel® 7 process, Intel® 14th-Gen processors have up to 24 cores/ 32 threads to deliver up to 2x the performance when compared to previous Intel® 10th or 11th-Gen platforms. Nuvo-9531 is a compact fanless embedded computer that offers the ultimate computing for various industrial applications.

Nuvo-9531 has rich I/O functions. It features four 2.5GbE with optional PoE+ PSE and four USB3.2 Gen1 ports for multiple camera connectivity for machine vision and surveillance applications. In addition, it features a Gen4 x4 M.2 NVMe slot for the latest NVMe SSD that supports read/ write speeds up to 7000 MB/s; a hot-swappable HDD tray to hot-swap the storage drive without turning off the system or dismantling the chassis; two mPCIe and one M.2 E key slots to install WiFi or 5G/ 4G wireless communication modules. The system is also equipped with 8x DIO, 2x COM ports, and dual display outputs for your industrial embedded application needs.

As a compact embedded computer, Nuvo-9531 delivers excellent computing performance and offers an abundance of I/O connections. It is suitable for a variety of industrial applications, especially when installation space is limited.

Specifications

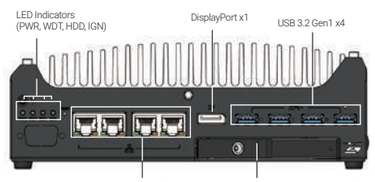
System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU[1] (LGA1700 socket, 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® H610E platform controller hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)	
Memory	Up to 32GB non-ECC DDR4 3200 SDRAM (one SODIMM slot)	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	4x 2.5GBASE-T Ethernet ports by Intel® I226-IT GbE controllers	
PoE+	Optional IEEE 802.3at PoE+ PSE for 4x 2.5GbE ports 100 W total power budget	
USB 3.2	4x USB 3.2 Gen1 (5 Gbps) ports	
USB 2.0	2x USB 2.0 ports	
Video Port (Integrated Graphics)	1x VGA output, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	1x software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	

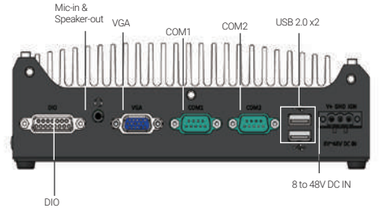
Internal Expansion Bus	
Mini PCI Express	2x full-size mini PCI Express sockets with internal SIM sockets
M.2 E key	1x M.2 2230 E key socket for WiFi5, WiFi6 or Google Edge TPU module
Storage Interface	
SATA HDD	1x hot-swappable 2.5" HDD/ SSD tray for 7mm HDD/ SSD
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8-48V DC input with optional ignition power control
Mechanical	
Dimension	212mm (W) x 165 mm (D) x 63 mm (H)
Weight	2.4 kg
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	**with 35W CPU** -25°C to 60°C [2] **with 65W CPU** (installation of the optional fan kit is recommended) -25°C to 60°C [2][3]
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

[1] A BIOS update may be required for the system to recognize 13th-Gen processors. Please contact Neousys Technology for more information.
[2] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[3] For 65W CPUs, the optional fan kit is recommended for operating at ambient temperatures higher than 50°C.

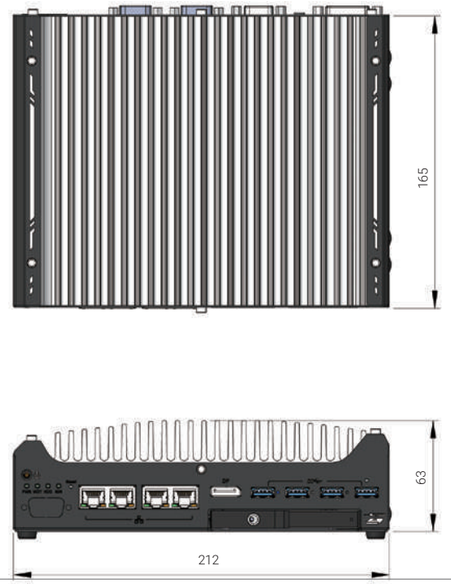
Last updated: 11 - Sep 2024

Appearance





Dimensions



Unit : mm

Ordering Information

Model No.	Product Description
Nuvo-9531	Intel® 14th/13th/12th-Gen Core™ i9/ i7/ i5/ i3 compact fanless computer with 4x 2.5GbE , 4x USB3.2 Gen 1 and a hot-swappable HDD tray
Optional 802.3at PoE+ PSE for 4x 2.5GbE ports	
Optional ignition power control	

Optional Accessories

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.
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)
DINRAIL-31	DIN-rail mounting assembly for Nuvo-9531 series
AccsyBx-FAN-Nuvo9531_9501	Fan kit with 92mm x 92mm fan for Nuvo-9531/ Nuvo-9501 series

Nuvo-9531-FT Series

Intel® 14th/13th/12th-Gen Core™ i9/ i7/ i5/ i3 Compact Fanless Computer with 4x 2.5GbE, 4x USB3.2 and 1x Hot-swappable HDD Tray and Flattop Heatsink

Key Features

- **212 x 165 x 45 mm low-profile design with flattop heatsink**
- **Intel® 14th/13th/12th-Gen Core™ 65W/ 35W LGA1700 CPU**
- **Rugged, -25°C to 60°C fanless operation**
- **4x 2.5GbE with optional PoE+ and 4x USB3.2 Gen 1 with screw-lock**
- **1x M.2 2280 Gen4 x4 NVMe and 1x hot-swappable HDD tray for storage**
- **4-CH isolated DI and 4-CH isolated DO**
- **VGA + DP dual display output**
- **Optional ignition power control**

Introduction

Nuvo-9531-FT is a new category of fanless computer utilizing flattop heatsink for passive heat dissipation. It is designed to be installed inside a metal cabinet, waterproof box or explosion-proof case, where ventilation is limited. With the flattop heatsink and the non-adhesive thermal pad on top, heat generated by Nuvo-9531-FT can be effectively conducted to the outer surface of the cabinet to maintain optimum operating temperature.

Nuvo-9531-FT supports Intel® 14th Gen processors with up to 24 cores/ 32 threads to deliver almost double the performance when compared to previous Intel® 10th or 11th Gen platforms. It has rich I/O functions such as four 2.5GbE with optional PoE+ PSE and four USB3.2 Gen1 ports for multiple camera connectivity for machine vision and surveillance applications. In addition, it features a Gen4 x4 M.2 to support an NVMe SSD with read/ write speeds up to 7000 MB/s; a hot-swappable HDD tray to hot-swap the storage drive without turning off the system or dismantling the chassis; two mini PCIe and one M.2 E key slots to install WiFi or 5G/ 4G wireless communication modules. The system is also equipped with 8x DIO, 2x COM ports, and dual display outputs for your industrial embedded application needs.

Combining excellent computing performance, abundant I/O connections, compactness, and a unique flattop heatsink, Nuvo-9531-FT is perfect for applications deployed in a sealed cabinet or confined space, where traditional fanless computers fall short.

Specifications

System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	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® H610E platform controller hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)	
Memory	Up to 32GB non-ECC DDR4 3200 SDRAM (one SODIMM slot)	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	4x 2.5GBASE-T Ethernet ports by Intel® I226-IT GbE controllers	
PoE+	Optional IEEE 802.3at PoE+ PSE for 4x 2.5GbE ports 100 W total power budget	
USB 3.2	4x USB 3.2 Gen1 (5 Gbps) ports	
USB 2.0	2x USB 2.0 ports	
Video Port (Integrated Graphics)	1x VGA output, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	1x software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	

Internal Expansion Bus	
Mini PCI Express	2x full-size mini PCI Express sockets with internal SIM sockets
M.2 E key	1x M.2 2230 E key socket for WiFi5, WiFi6 or Google Edge TPU module
Storage Interface	
SATA HDD	1x hot-swappable 2.5" HDD/ SSD tray for 7mm HDD/ SSD
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8-48V DC input with optional ignition power control
Mechanical	
Dimension	212mm (W) x 165 mm (D) x 45 mm (H)
Weight	2.4 kg
Mounting	Wall-mount (optional)
Environmental	
Operating Temperature	**with 35W CPU** -25°C to 60°C[1][2] **with 65W CPU** -25°C to 60°C[1][2](configured as 35W TDP)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

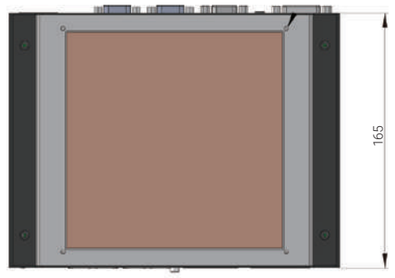
[1] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[2] The system was tested while mounted on an aluminum panel measuring 60(W) x 60(D) x 0.3(H) cm in a high temperature environment to simulate in-cabinet conditions. For more information, please refer to the user manual.

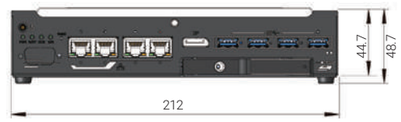
Last updated: 29 - Aug 2024

Appearance

Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9531-FT	Intel® 14th/13th/12th-Gen Core™ i9/ i7/ i5/ i3 compact fanless computer with 4x 2.5GbE , 4x USB3.2 Gen 1, a hot-swappable HDD tray and flattop heatsink
Optional ignition power control and 802.3at PoE+ PSE for 4x 2.5GbE ports	

Optional Accessories

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.
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)
Wmkit-Nuvo-9531-FT	Wall mounting assembly for Nuvo-9531-FT

Nuvo-9501 Series

Intel® 14th/13th/12th-Gen Core™ Compact Fanless Computer with 2x 2.5GbE and 4x USB3.2

Key Features

- **Intel® 14th/13th/12th -Gen Core™ 35W/ 65W LGA1700 CPU**
- **Compact 212 x 165 x 80 mm footprint**
- **Rugged, -25°C to 60°C fanless operation (Nuvo-9505D only)**
- **Up to 32GB DDR4 3200 SODIMM**
- **2x 2.5GbE and 4x USB3.2 Gen 1 with screw-lock**
- **Supports 1x M.2 2280 Gen4 x4 NVMe and 1x 3.5”/2.5” SATA HDD/SSD storage**
- **4-CH isolated DI and 4-CH isolated DO (Nuvo-9505D only)**
- **VGA + DP dual display outputs**

Introduction

Nuvo-9501 is a cost-effective compact fanless embedded computer based on the Intel® 14th/13th/12th-Gen platform. Built on the advanced Intel® 7 process, Intel® 14th Gen processors offer up to 24 cores/ 32 threads to deliver up to 2x the performance when compared to previous Intel® 10th or 11th-Gen platforms. Nuvo-9501 is a cost-effective, compact and yet powerful fanless embedded computer that offers the ultimate computing for various industrial applications.

Nuvo-9501 offers essential I/O functions for general industrial needs including dual 2.5GbE ports, dual display ports and four USB3.2 ports. In addition, it features a Gen4 x4 M.2 NVMe slot for the latest NVMe SSD with read/ write speeds up to 7000 MB/s. Also, it supports a 2.5” or 3.5” HDD for high capacity storage needs such as data collection or surveillance applications. It also offers two mPCIe and one M.2 E key slots for installing WiFi or 5G/ 4G wireless communication modules.

As a cost-effective and compact embedded computer, Nuvo-9501 delivers excellent computing performance and offers essential I/O connectivity to meet customers’ needs and cost. It is suitable for a variety of industrial applications.

Specifications

System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU[1] (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® H610E platform controller hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)	
Memory	Up to 32GB non-ECC DDR4 3200 SDRAM (one SODIMM slot)	
TPM	Supports fTPM 2.0	
I/O Interface		
Ethernet	2x 2.5GBASE-T Ethernet ports by Intel® I226-V GbE controllers (Nuvo-9501) 2x 2.5GBASE-T Ethernet ports by Intel® I226-IT GbE controllers (Nuvo-9505D)	
USB 3.2	4x USB 3.2 Gen1 (5 Gbps) ports	
USB 2.0	2x USB 2.0 ports	
Video Port (Integrated Graphics)	1x VGA output, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	1x software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO (Nuvo-9505D only)	

Internal Expansion Bus	
Mini PCI Express	2x full-size mini PCI Express sockets with internal SIM sockets
M.2 E key	1x M.2 2230 E key socket for WiFi5, WiFi6 or Google Edge TPU module
Storage Interface	
SATA HDD	1x internal SATA port for 3.5" HDD or 2.5" HDD/ SSD
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8-35V DC input with remote on/ off control
Mechanical	
Dimension	212mm (W) x 165 mm (D) x 80 mm (H)
Weight	2.5 kg
Mounting	Wall-mount (optional) or DIN-rail mount (optional)
Environmental	
Operating Temperature	**With 35W CPU** -10°C to 60°C [2] (Nuvo-9501) -25°C to 60°C [2] (Nuvo-9505D) **With 65W CPU** (installation of the optional fan kit is recommended) -10°C to 60°C [2][3] (Nuvo-9501) -25°C to 60°C [2][3] (Nuvo-9505D)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

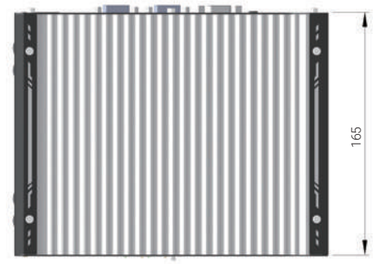
[1] A BIOS update may be required for the system to recognize 13th-Gen processors. Please contact Neousys Technology for more information.
[2] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[3] For 65W CPUs, the optional fan kit is recommended for operating at ambient temperatures higher than 50°C.

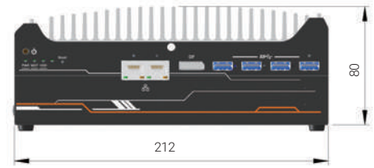
Last updated: 11 - Sep 2024

Appearance

Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9501	Intel® 14th/ 13th/12th-Gen Core™ compact fanless computer with 2x 2.5GbE and 4x USB3.2
Nuvo-9505D	Intel® 14th/ 13th/12th-Gen Core™ compact fanless computer with 2x 2.5GbE, 4x USB3.2 and 8x isolated DIO

Optional Accessories

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)
Wmkit-H-Nuvo9501	Wall mount assembly for Nuvo-9501 series
DINRAIL-31	DIN-rail mounting assembly for Nuvo-9501 series
AccsyBx-FAN-Nuvo9531_9501	Fan kit with 92mm x 92mm fan for Nuvo-9501/ Nuvo-9531 series

Nuvo-7000E/P/DE Series

Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 Fanless Controller with 6x GbE Ports, Patented Cassette and MezIO® Interface

Key Features

- **Intel® 9th/ 8th-Gen Core™ i hexa-core 35W/ 65W LGA1151 CPU**
- **Patented Cassette for PCI/PCIe add-on card accommodation***
- **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**
- **M.2 2280 M key socket (Gen3 x4) supporting NVMe SSD or Intel® Optane™ memory**
- **4x USB 3.1 Gen2 ports and 4x USB 3.1 Gen1 ports**
- **VGA/ DVI/ DP triple independent display, supporting 4K2K resolution**

CE FC

**R.O.C Patent No. M456527*

Introduction

The Neousys Nuvo-7000 series is powered by Intel® 9th/ 8th-Gen Core™ i processors with up to 6-core/ 8-core architecture that offer significant performance improvement over previous 6th and 7th-Gen platforms.

Nuvo-7000 series includes Neousys' track-proven technologies for superior ruggedness and versatility, such as effective fanless design, patented expansion Cassette and proprietary MezIO® interface. It also incorporates cutting-edge computer I/O like USB 3.1 Gen2 with up to 10 Gbps throughput and M.2 2280 M key socket for NVMe SSD or Intel® Optane™ memory for ultimate system performance. The plethora of on-board I/O ports (GbE, USB and COM) feature sophisticated protection circuits to endure stress from ESD and power surge. This makes Nuvo-7000 series one of the most solid embedded controller on the market.

Flexible and versatile for a variety of applications, Nuvo-7000 variants are available with different Cassette expansion options. With Neousys Nuvo-7000 series, you get a true rugged platform that can accommodate a single PCIe card (Nuvo-7000E), dual PCIe cards (Nuvo-7000DE) or a single PCI card (Nuvo-7000P) according your application needs.

Specifications

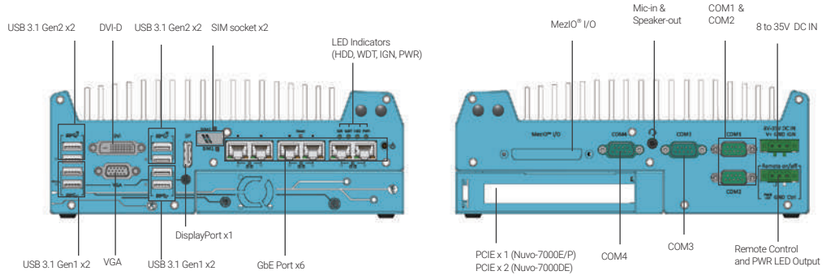
System Core	
Processor	Supporting Intel® 9th/ 8th-Gen CPU (LGA1151 socket, 65W/ 35W TDP) - Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T - Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T - Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T - Intel® Pentium® G5400/ G5400T - Intel® Celeron® G4900/ G4900T
Chipset	Intel® Q370 platform controller hub
Graphics	Integrated Intel® UHD graphics 630
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	2x Gigabit Ethernet ports by I219 and I210 (Nuvo-7002E/ P/ DE) 6x Gigabit Ethernet ports by I219 and 5x I210 (Nuvo-7006E/ P/ DE)
PoE+	Optional IEEE 802.3at PoE+ PSE for Port 3 to Port 6 100 W total power budget
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
Video Port (Integrated Graphics)	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA HDD	2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3/ x4) for NVMe SSD or Intel® Optane™ memory installation (supports SATA signal)
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 (Nuvo-7002E/ 7006E) 2x PCIe x16 slots@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-7002DE/ 7006DE) 1x PCI slot in Cassette (Nuvo-7002P/ 7006P)
Mini PCI Express	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA)
M.2	1x M.2 2242 B key socket with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 90 mm (H) (Nuvo-7000E/ P series) 240 mm (W) x 225 mm (D) x 110.5 mm (H) (Nuvo-7000DE series)
Weight	3.58 kg (Nuvo-7000E/ P series) 3.7 kg (Nuvo-7000DE series)
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	**with 35W CPU** -25°C to 70°C ** **with 65W CPU** -25°C to 70°C */** (configured as 35W TDP) -25°C to 50°C */** (configured as 65W TDP)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55024
Safety	UL62368-1, IEC62368-1

** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Last updated: 22 - Dec 2023

Appearance



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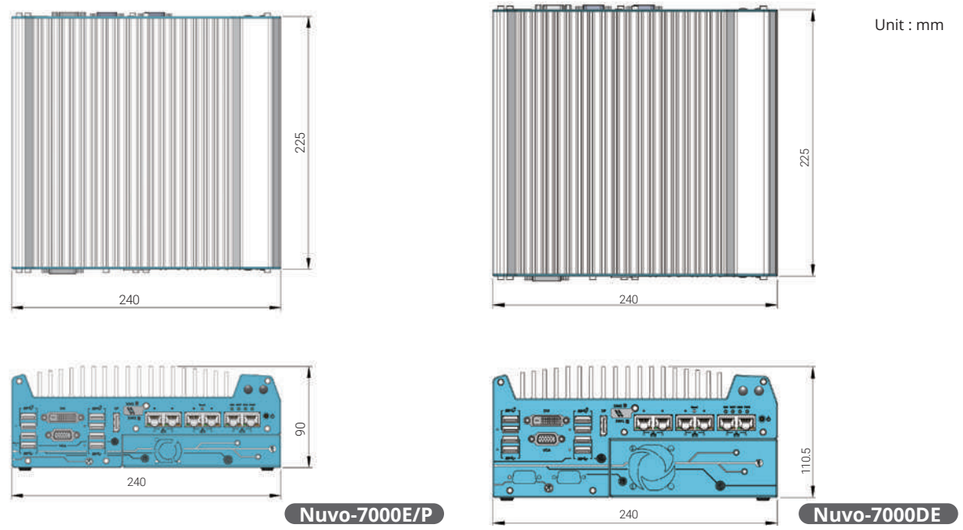


Unit : mm

Ordering Information

Model No.	Product Description
Nuvo-7002E	Intel® 9th/ 8th-Gen Core™ fanless controller with 2x GbE, single-slot PCI Express Cassette and MezIO® interface
Nuvo-7002P	Intel® 9th/ 8th-Gen Core™ fanless controller with 2x GbE, single-slot PCI Cassette and MezIO® interface
Nuvo-7006E	Intel® 9th/ 8th-Gen Core™ fanless controller with 6x GbE, single-slot PCI Express Cassette and MezIO® interface
Nuvo-7006P	Intel® 9th/ 8th-Gen Core™ fanless controller with 6x GbE, single-slot PCI Cassette and MezIO® interface
Nuvo-7002DE	Intel® 9th/ 8th-Gen Core™ fanless controller with 2x GbE, dual-slot PCI Express Cassette and MezIO® interface
Nuvo-7006DE	Intel® 9th/ 8th-Gen Core™ fanless controller with 6x GbE, dual-slot PCI Express Cassette and MezIO® interface
Optional IEEE 802.3at PoE+ for GbE ports 3 to 6	

Optional Accessories

DINRAIL-O	DIN-rail mount assembly for Nuvo-7000 series
Dmpbr-Nuvo5000_7000	Neousys' patented damping brackets assembly for Nuvo-7000E/DE/P
Fankit-25	Fan assembly for 1-slot Cassette, 25x25x10 mm
PA-160W-OW	160W AC/DC power adapter 20V/8A;18AWGx4C/120cm, cord end terminals for terminal block, operating temperature : -30°C to 70°C.
Cassette Modules (Nuvo-7000 E/P only)	
CSM-PoE354	Cassette module with PCIe-PoE354at and pre-installed passive heat-spreader
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 USB 3.1 ports
MezIO®-G4	MezIO® module with 4x GigE ports
MezIO®-G4P	MezIO® module with 4x IEEE 802.3at PoE+ ports

Only Nuvo-7006E/P/DE-PoE support MezIO-G4P

Nuvo-7000LP Series

Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 Fanless Controller with 6x GbE Ports, MezIO® Interface and Low-profile Chassis

Key Features

- **Intel® 9th/ 8th-Gen Core™ i hexa-core 35W/ 65W LGA1151 CPU**
- **Low-profile chassis with hot-swappable 2.5" HDD/ SSD tray**
- **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**
- **M.2 2280 M key socket (Gen3 x4) supporting NVMe SSD or Intel® Optane™ memory**
- **4x USB 3.1 Gen2 ports and 4x USB 3.1 Gen1 ports**
- **VGA/ DVI/ DP triple independent display, supporting 4K2K resolution**

CE FC c UL us LISTED E511805

Introduction

The Neousys Nuvo-7000LP series is powered by Intel® 9th/ 8th-Gen Core™ i processors with up to 6-core/ 8-core architecture that offer a significant performance improvement over previous 6th or 7th-Gen platforms.

Nuvo-7000LP series is a derivative of Nuvo-7000 series that features the same level of ruggedness and versatility in a 79 mm low-profile chassis. In addition to effective fanless design, proprietary MezIO® interface and plethora of on-board I/O interfaces, Nuvo-7000LP series features one front-accessible, hot-swappable HDD/ SSD tray which can be configured as RAID 0/1 when combined with the internal SATA port. It also leverages cutting-edge M.2 NVMe SSD technology for over 2000MB/s disk read/ write speed, or install an Intel® Optane™ memory for the ultimate system acceleration.

Neousys Nuvo-7000LP series consolidates the latest Intel® hexa/octa-core CPU, high-speed I/O interfaces, super-fast disk access and flexible storage configuration to form a high-performance ruggedized embedded controller. In addition, you can also take advantage of the built-in MezIO® interface to add on modules for application-specific I/Os.

Specifications

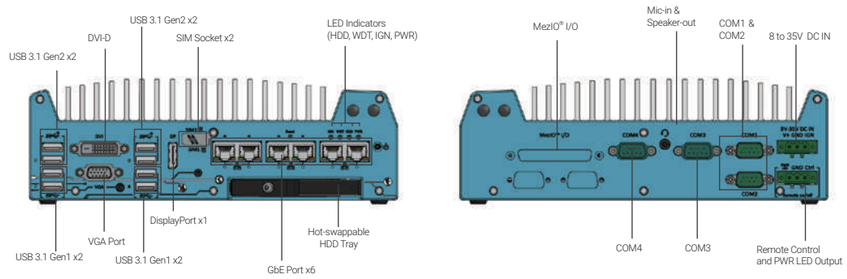
System Core	
Processor	Supporting Intel® 9th/ 8th-Gen CPU (LGA1151 socket, 65W/ 35W TDP) - Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T - Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T - Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T - Intel® Pentium® G5400/ G5400T - Intel® Celeron® G4900/ G4900T
Chipset	Intel® Q370 platform controller hub
Graphics	Integrated Intel® UHD graphics 630
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	2x Gigabit Ethernet ports by I219 and I210 (Nuvo-7002LP) 6x Gigabit Ethernet ports by I219 and 5x I210 (Nuvo-7006LP)
PoE+	Optional IEEE 802.3at PoE+ PSE for Port 3 to Port 6 100 W total power budget
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
Video Port (Integrated Graphics)	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA HDD	1x front-accessible, hot-swappable 2.5" HDD/ SSD tray 1x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3/ x4) for NVMe SSD or Intel® Optane™ memory installation (supports SATA signal)
mSATA	1x full-size mSATA port (mux with mini-PCIe)

Expansion Bus	
Mini PCI Express	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA)
M.2	1x M.2 2242 B key socket with dual front-accessible SIM sockets
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 79 mm (H)
Weight	3.1 kg
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	**with 35W CPU** -25°C to 70°C ** **with 65W CPU** -25°C to 70°C */** (configured as 35W TDP) -25°C to 50°C */** (configured as 65W TDP)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55024
Safety	UL62368-1, IEC62368-1

** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

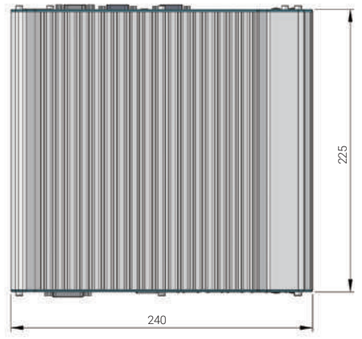
Last updated: 22 - Dec 2023

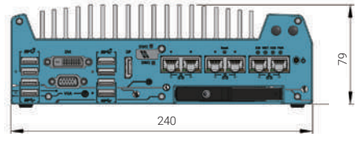
Appearance



Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-7002LP	Intel® 9th/ 8th-Gen Core™ fanless controller with 2x GbE ports, MezIO® interface and low-profile chassis
Nuvo-7006LP	Intel® 9th/ 8th-Gen Core™ fanless controller with 6x GbE ports, MezIO® interface and low-profile chassis
Optional IEEE 802.3at PoE+ for GbE ports 3 to 6	

Optional Accessories

PA-160W-OW	160W AC/DC power adapter 20V/8A;18AWGx4C/120cm, cord end terminals for terminal block, operating temperature : -30 to 70°C.
DINRAIL-O	DIN-rail mount assembly for Nuvo-7000 series
Dmpbr-Nuvo5000_7000	Neousys' patented damping brackets assembly for Nuvo-7000E/DE/P/ Nuvo-7000LP
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 USB 3.1 ports
MezIO®-G4	MezIO® module with 4x GigE ports
MezIO®-G4P	MezIO® module with 4x IEEE 802.3at PoE+ ports *Only Nuvo-7006LP-PoE supports MezIO-G4P*

Nuvo-7501 Series

Intel® 9th/ 8th -Gen Core™ i7/ i5/ i3 Compact Fanless Computer with 2x GbE and up to 6x COM

Key Features

- **Compact 255 x 173 x 76 mm footprint**
- **Intel® 9th/ 8th-Gen Core™ 35W LGA1151 CPU**
- **Rugged, -25°C to 60°C fanless operation**
- **2x GbE and 4x USB 3.1**
- **Up to 6x COM ports, optional isolation on ports 1 to 4**
- **VGA + DVI dual display outputs**
- **Accommodates one 3.5" or 2.5" HDD/ SSD**
- **8-CH isolated DI and 8-CH isolated DO (Nuvo-7505D only)**

CE FC

Introduction

Nuvo-7501 series is a cost-effective, compact and yet powerful fanless embedded computer with a 255 x 173 x 76 mm footprint. Powered by an Intel® 9th/ 8th-Gen Core™ hexa/ octa core CPU, it offers more than 50% computation performance improvement over the previous generation.

Nuvo-7501 series is designed to be simple and compact while retaining essential elements of a rugged embedded fanless solution. It features I/Os such as 2x GbE, 4x USB 3.1 and 6x COM ports for common industrial applications. In addition to the M.2 2280 SATA SSD, it can also support a 2.5" SSD/ HDD or a 3.5" HDD. For Nuvo-7505D, it offers isolated DIO and isolated COM, which can protect the controller against ground loops in harsh environments.

The Nuvo-7501 series is a cost-effective solution that has retained quality materials all Neousys systems utilize; and the design flow/ stringent test procedures it must endure. It is a fanless embedded platform that has hit the sweet spot in terms of cost, size and performance. Nuvo-7501 series is an ideal fanless embedded solution for various industrial applications.

Specifications

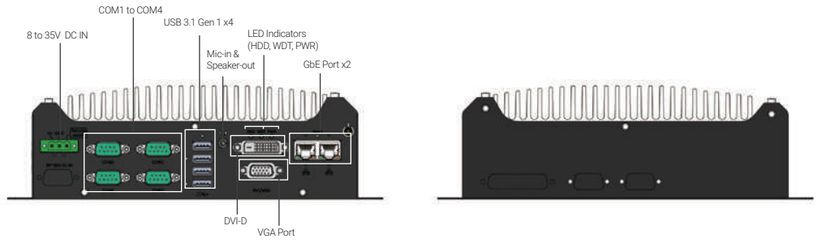
	Nuvo-7501	Nuvo-7505D
System Core		
Processor	Supporting Intel® 9th/ 8th-Gen Core™ CPU (LGA1151 socket) - Intel® Core™ i7-9700E*/ i7-9700TE/ i7-8700*/ i7-8700T - Intel® Core™ i5-9500E*/ i5-9500TE/ i5-8500*/ i5-8500T - Intel® Core™ i3-9100E*/ i3-9100TE/ i3-8100*/ i3-8100T	
Chipset	Intel® H310 platform controller hub	
Graphics	Integrated Intel® UHD graphics 630	
Memory	Up to 32 GB DDR4 2666/ 2400 SDRAM (one SODIMM slots)	
TPM	Supports fTPM 2.0	
I/O Interface		
Ethernet port	2x Gigabit Ethernet ports by I219 and I210	
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports	
Video Port	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution	
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)	2x isolated software-programmable RS-232/ 422/ 485 ports (COM1/ COM2) 2x isolated RS-232 ports (COM3/ COM4) 2x RS-232 ports (COM5/ COM6)
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Isolated DIO	N/A	8-CH isolated DI and 8-CH isolated DO
Storage Interface		
SATA HDD	1x internal SATA port for 3.5" HDD or 2.5" HDD/ SSD	
M.2	1x M.2 2280 SATA interface	

	Nuvo-7501	Nuvo-7505D
Internal Expansion Bus		
Mini PCI-E	1x full-size mini PCI Express socket	
M.2	1x M.2 2242 B key socket with internal SIM socket	
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input	
Remote Ctrl & Status Output	1x 10-pin (2x5) pin header for remote on/off control and status LED output	
Mechanical		
Dimension	255mm (W) x 173 mm (D) x 76 mm (H)	
Weight	2.68 kg	
Mounting	Wall-mount (standard) or DIN-rail mount (optional)	
Environmental		
Operating Temperature	-25°C to 60°C **/***	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90% , non-condensing	
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4	
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	
EMC	CE/FCC Class A, according to EN 55032 & EN 55024	

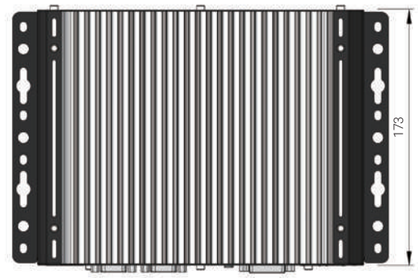
** Due to thermal limitations, 65W CPUs will be configured to operate in 35W mode by default.*
*** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*
**** For i7 CPUs, thermal throttling may occur when sustained full-loading applied at 60°C ambient temperature.*

Last updated: 18 - Jul 2023

Appearance



Dimensions



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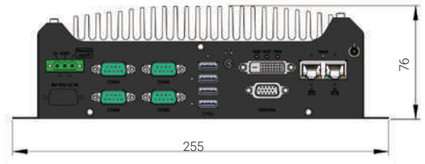


Ordering Information

Model No.	Product Description
Nuvo-7501	Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 compact fanless embedded computer with 2x GbE and 4x COM
Nuvo-7505D	Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 compact fanless embedded computer with isolated DIO, isolated COM and 2x GbE

Optional Accessories

PA-120W-OW	120W AC/ DC power adapter 20V/ 6A; 18AWG/ 120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C
DINRAIL-31	DIN-rail mount assembly for Nuvo-7501 series

Nuvo-7531 Series

Intel® 9th/ 8th -Gen Core™ i7/ i5/ i3 Compact Fanless Computer with 4x GbE , 4x USB3.1 and 1x hot-swappable HDD tray

Key Features

- **212 x 165 x 63 mm low-profile design**
- **Intel® 9th/ 8th-Gen Core™ 35W/ 65W LGA1151 CPU**
- **Rugged, -25°C to 60°C fanless operation**
- **4x GbE and 4x USB3.1 Gen1 with screw-lock**
- **1x hot-swappable HDD tray and 1x M.2 2280 socket for storage**
- **4-CH isolated DI and 4-CH isolated DO**
- **DVI-I + DP dual display outputs**
- **Optional ignition power control**

Introduction

Nuvo-7531 is one of the most compact fanless embedded controller supporting Intel® 9th/ 8th-Gen Core™ CPUs. Measuring just 212 x 165 x 63 mm, it comfortably fits into confined spaces. Despite its compact size, Nuvo-7531 does not compromise on performance. Based on Intel® 9th/ 8th-Gen Core™ 65W/ 35W CPUs, it can deliver more than 50% extra performance compared to the previous generation. Nuvo-7531 is a compact and powerful fanless embedded controller for a variety of industrial applications.

The Nuvo-7531 has abundant I/O functions. It features four GbE ports and four USB3.1 ports for multiple GbE and USB cameras.There is a hot-swappable HDD tray for you to hot-swap the storage drive without turning off the system or dismantle the chassis. There are three mPCIe slots to install WIFI or 3G/ 4G for wireless communication needs. In addition, Nuvo-7531 is also equipped with 8x DIO, 2x COM ports and dual display outputs for your application needs.

For a compact embedded controller, Nuvo-7531 delivers amazing computing power and provides rich I/O functions. It is suitable for a variety of industrial applications, especially when space is limited. Nuvo-7531 is a little giant in the world of rugged embedded controllers.

Specifications

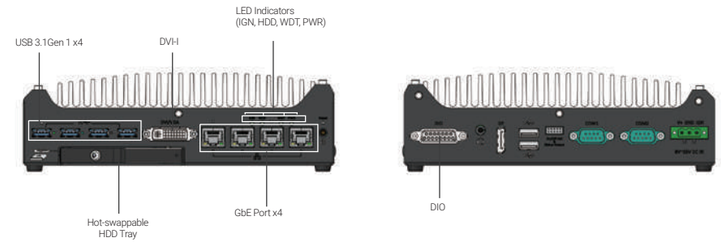
System Core	
Processor	Supporting Intel® 9th/ 8th-Gen Core™ CPU (LGA1151 socket) - Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T - Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T - Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
Chipset	Intel® H310 platform controller hub
Graphics	Integrated Intel® UHD graphics 630
Memory	Up to 32 GB DDR4 2666/ 2400 SDRAM (one SODIMM slot)
TPM	Supports fTPM 2.0
I/O Interface	
Ethernet	4x Gigabit Ethernet ports by I219 and 3x I210
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	2x USB 2.0 ports
Video Port (Integrated Graphics)	1x DVI-I for DVI/VGA output, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Storage Interface	
SATA HDD	1x hot-swappable 2.5" HDD/ SSD tray
M.2	1x M.2 2280 SATA interface
Internal Expansion Bus	
Mini PCI Express	3x full-size mini PCI Express sockets with internal SIM sockets

Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input with optional ignition power control
Remote Ctrl. & LED Output	1x 10-pin (2x5) pin header for remote on/off control and status LED output
Mechanical	
Dimension	212 mm (W) x 165 mm (D) x 63 mm (H)
Weight	2.5 kg
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	**with 35W CPU** **-25°C to 60°C */**** **with 65W CPU, optional fan kit is required** **-25°C to 60°C */****
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
Safety	EN62368-1
EMC	CE/FCC Class A, according to EN 55032 & EN 55024

** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*
*** For i7 CPUs, thermal throttling may occur when sustained full-loading applied at 60°C ambient temperature.*

Last updated: 18- Jul 2023

Appearance



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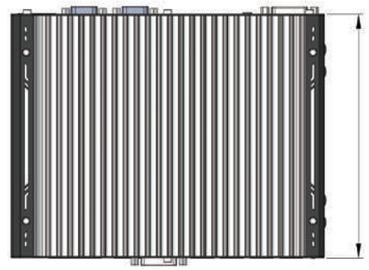

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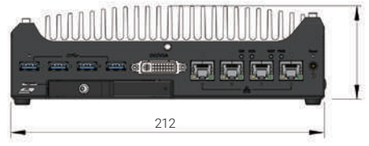


Ordering Information

Model No.	Product Description
Nuvo-7531	Intel® 9th/ 8th -Gen Core™ i7/ i5/ i3 compact fanless computer with 4x GbE , 4x USB 3.1 and a hot-swappable HDD tray
Optional ignition power control	

Optional Accessories

PA-120W-OW	120W AC/ DC power adapter 20V/ 6A; 18AWG/ 120cm; cord end terminals for terminal block, operating temperature : -30°C to 70 °C
DINRAIL-31	DIN-rail mount assembly for Nuvo-7531 series
AccsyBx-FAN-Nuvo-7531	Fan kit with 92mm x 92mm fan for Nuvo-7531 series

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 SODIMM**
- **Accommodates two 2.5" SATA HDD/ SSD with RAID 0/ 1 support**
- **VGA/ DVI/ DP triple independent display, supporting 4K2K resolution**

CE FC

**R.O.C Patent No. M456527*

Introduction

Nuvo-5000 is Neousys' 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, USB 3.1/ USB 2.0, 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)* Intel® Core™ i5-6500 (6M Cache, 3.2/ 3.6 GHz, 65W TDP)* Intel® Core™ i3-6100 (3M Cache, 3.7 GHz, 51W TDP)* Intel® Pentium® G4400 (3M Cache, 3.3 GHz, 54W TDP)* Intel® Celeron® G3900 (2M Cache, 2.8 GHz, 51W TDP)* Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz, 35W TDP) Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz, 35W TDP) Intel® Core™ i3-6100TE (4M Cache, 2.7 GHz, 35W TDP) Intel® Pentium® G4400TE (3M Cache, 2.4 GHz, 35W TDP) 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 SODIMM 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) 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 to 6, 80W total power budget
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports via native xHCI controller
USB 2.0	4x USB 2.0 ports
Video Port	1x stacked VGA + DVI-D 2x DisplayPort, supporting 4K2K resolution (triple-independent display support)
Serial Port	2x software-programmable RS-232/ 422/ 485 port (COM1 & COM3) 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)

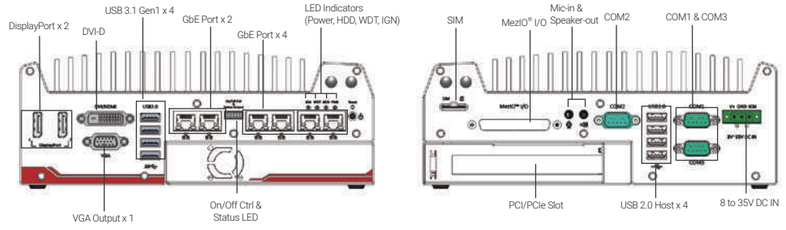
Expansion Bus		
PCI/PCI Express	1x PCI slot in Cassette (Nuvo-5002P/5006P) 1x PCIe x16 slot @ Gen3, 8-lanes PCIE signals in Cassette (Nuvo-5002E/ 5006E)	
Mini PCI-E	1x internal Mini PCIe socket with front-accessible SIM socket 1x internal Mini PCIe socket with internal SIM socket (mux with mSATA)	
Expandable I/O	1x MezIO® expansion port for Neousys' MezIO® modules	
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8 to 35V 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	
Mounting	Wall-mount (standard) or DIN-rail mount (optional)	
Environmental		
Operating Temperature	-25°C to 70°C **	i7-6700TE (35W TDP) i5-6500TE (35W TDP) i3-6100TE (35W TDP) Pentium G4400TE (35W TDP)
	-25°C to 70°C */** (configured as 35W CPU mode) -25°C to 50°C */** (configured as 65W/ 51W CPU mode)	i7-6700 (65W/51W TDP) i5-6500 (65W/51W TDP) i3-6100 (65W/51W TDP)
Storage Temperature	-40°C to 85°C	
Humidity	10% to 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 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 obtain higher operating temperature.*

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

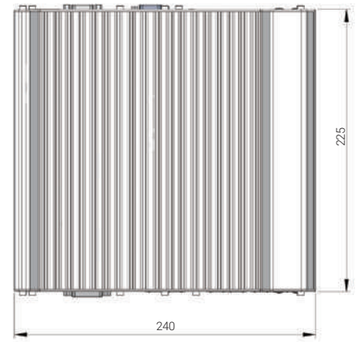
Last updated: 15 - Jan 2020

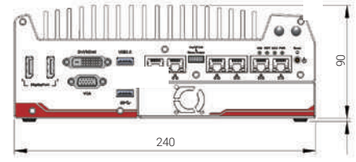
Appearance



Dimensions

Unit : mm





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 to 6	

Optional Accessories

DINRAIL-O	DIN-rail mount 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.
Dmpbr-Nuvo5000_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-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 USB 3.1 ports
MezIO®-G4	MezIO® module with 4x GigE ports
MezIO®-G4P	MezIO® module with 4x IEEE 802.3at PoE+ ports

Only Nuvo-5006E-PoE and Nuvo-5006P-PoE support MezIO-G4P

Nuvo-5000LP Series

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

Key Features

- **Intel® 6th-Gen Core™ i7/ i5/ i3 35W/ 65W LGA1151 CPU**
- **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 32GB, DDR4-2133 SODIMM**
- **One hot-swappable 2.5" HDD/ SSD and one fixed 2.5" HDD/ SSD, supporting RAID 0/ 1**
- **VGA/ DVI/ DP triple independent display, supporting 4K2K resolution**
- **77mm low-profile design**

Introduction

Nuvo-5002LP/ 5006LP are low-profile systems in the Nuvo-5000 family. They feature a 77mm low-profile chassis and yet retain extraordinary -25°C to 70°C wide operating temperature capability. Neousys Nuvo-5002LP/ 5006LP supports LGA1151 socket-type CPUs so one can choose an Intel® 6th-Gen Core™ i7/i5/i3, from 35W to 65W TDP CPU according to application performance and operation needs.

Nuvo-5002LP/ 5006LP has plentiful I/Os such as GbE, USB 3.1/ USB 2.0, COM and VGA/ DVI/ DP. It also incorporates Neousys' MezIO® interface for additional or application-oriented I/O expansion. By installing an optional MezIO® module, Nuvo-5002LP/ 5006LP transforms from a typical embedded controller to a ruggedized application platform that may include up to 11x COM ports, 32 DIO channels, ignition power control or customized application-specific I/Os.

Specifications

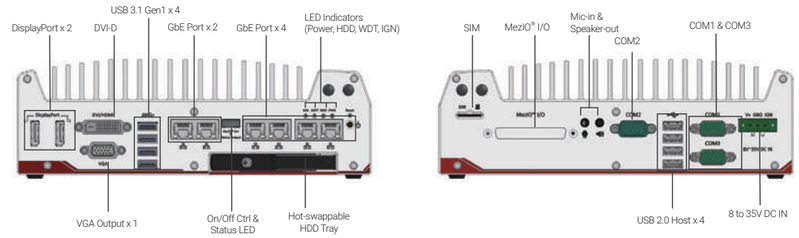
System Core	
Processor	Intel® Core™ i7-6700 (8M Cache,3.4/ 4.0 GHz, 65W TDP)* Intel® Core™ i5-6500 (6M Cache, 3.2/ 3.6 GHz, 65W TDP)* Intel® Core™ i3-6100 (3M Cache, 3.7 GHz, 51W TDP)* Intel® Pentium® G4400 (3M Cache, 3.3 GHz, 54W TDP)* Intel® Celeron® G3900 (2M Cache, 2.8 GHz, 51W TDP)* Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz, 35W TDP) Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz, 35W TDP) Intel® Core™ i3-6100TE (4M Cache, 2.7 GHz, 35W TDP) Intel® Pentium® G4400TE (3M Cache, 2.4 GHz, 35W TDP) 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 SODIMM slots)
AMT	Supports AMT 11.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	2x Gigabit Ethernet ports by Intel® I219 and I210 (Nuvo-5002LP) 6x Gigabit Ethernet ports by Intel® I219 and 5x I210 (Nuvo-5006LP)
PoE+	Optional IEEE 802.3at PoE+ PSE for GbE Ports 3 to 6, 80W total power budget
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports via native xHCI controller
USB 2.0	4x USB 2.0 ports
Video Port	1x stacked VGA + DVI-D 2x DisplayPort, supporting 4K2K resolution (triple-independent display support)
Serial Port	2x software-programmable RS-232/ 422/ 485 port (COM1 & COM3) 1x RS-232 port (COM2)
Audio	1x mic-in and 1x speaker-out
Storage Interface	
SATA HDD	1x hot-swappable HDD tray for 2.5" HDD/ SSD installation 1x 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		
Mini PCI-E	1x internal mini PCI Express socket with front-accessible SIM socket 1x internal mini PCI Express socket with internal SIM socket (mux. with mSATA)	
Expandable I/O	1x MezIO® expansion interface for Neousys MezIO® modules	
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8 to 35V 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 77mm (H)	
Weight	3.1kg	
Mounting	Wall-mount (standard) or DIN-rail mount (optional)	
Environmental		
Operating Temperature	-25°C to 70°C **	i7-6700TE (35W TDP) i5-6500TE (35W TDP) i3-6100TE (35W TDP) Pentium G4400TE (35W TDP)
	-25°C to 70°C */** (configured as 35W CPU mode) -25°C to 50°C */** (configured as 65W/ 51W CPU mode)	i7-6700 (65W/51W TDP) i5-6500 (65W/51W TDP) i3-6100 (65W/51W TDP)
Storage Temperature	-40°C to 85°C	
Humidity	10% to 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 & EN 55032	

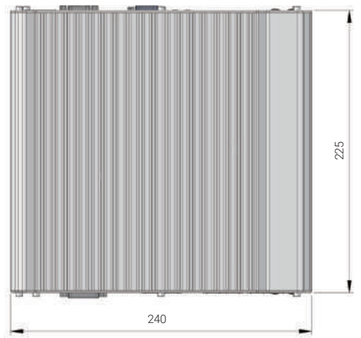
** For i7-6700 running at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading applied. Users can configure CPU power in BIOS to obtain higher operating temperature.*

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

Appearance



Dimensions



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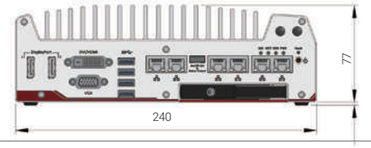


Ordering Information

Model No.	Product Description
Nuvo-5002LP	Intel® 6th-Gen Core™ low-profile fanless controller with 2x GbE and MezIO® interface
Nuvo-5006LP	Intel® 6th-Gen Core™ low-profile fanless controller with 6x GbE and MezIO® interface
Optional IEEE 802.3at PoE+ for GbE ports 3 to 6	

Optional Accessories

DINRAIL-O	DIN-rail mount assembly for Nuvo-5000LP series		
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30°C to 70°C.		
Dmpbr-Nuvo5000_7000	Neousys' patented damping bracket assembly for Nuvo-7000E/DE/P		
MezIO® Modules			
MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	*MezIO®-V20-EP*	MezIO® module with ignition power control function for in-vehicle application
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	*MezIO®-U4*	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	*MezIO®-G4*	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	*MezIO®-G4P*	MezIO®module with 4x IEEE 802.3at PoE ports

Only Nuvo-5006LP-PoE supports MezIO-G4P

Nuvo-5026E Series

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

Key Features

- **Intel® 6th-Gen Core™ i7/ i5/ i3 LGA1151 35W/ 65W**
- **Dual PCIe x8 slots in patented expansion Cassette***
- **MezIO® interface for easy function expansion**
- **Rugged, -25°C to 70°C fanless operation**
- **6x GbE ports, supporting 9.5 KB jumbo frame**
- **Up to 32 GB, DDR4-2133 SODIMM**
- **Accommodates two 2.5" SATA HDD/ SSD with RAID 0/1 support**
- **VGA/ DVI/ DP triple independent display, supporting 4K2K resolution**

CE FC

**R.O.C Patent No. M456527*

Introduction

Nuvo-5026E is a member of the Nuvo-5000 family with dual PCIe slots. The dual PCIe slots enhance expansion abilities while preserving all practical features such as ruggedness, performance and versatility. The expandability makes Nuvo-5026E more adaptable to various application needs while the two PCIe slots in the patented expansion Cassette are easy to access for PCIe card installation without the need to disassemble the system.

Nuvo-5026E supports LGA1151 6th-Gen Core™ processors. It offers processor selection flexibility from Core™ i7 to Celeron according to performance needs and operating environment. It also offers plenty of I/O functions such as 6x GbE, 4x USB 3.1, 3x COM ports and triple independent display support. In addition, Neousys' MezIO® interface can also further expand system I/Os offering up to either 11x COM ports, 10x GbE, 8x USB 3.1, 32x DIO or ignition power control by installing an optional MezIO® module.

Nuvo-5026E is an expandable and flexible platform with numerous I/O functions for various industrial applications.

Specifications

System Core	
Processor	Intel® Core™ i7-6700 (8M Cache,3.4/ 4.0 GHz, 65W TDP)* Intel® Core™ i5-6500 (6M Cache, 3.2/ 3.6 GHz, 65W TDP)* Intel® Core™ i3-6100 (3M Cache, 3.7 GHz, 51W TDP)* Intel® Pentium® G4400 (3M Cache, 3.3 GHz, 54W TDP)* Intel® Celeron® G3900 (2M Cache, 2.8 GHz, 51W TDP)* Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz, 35W TDP) Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz, 35W TDP) Intel® Core™ i3-6100TE (4M Cache, 2.7 GHz, 35W TDP) Intel® Pentium® G4400TE (3M Cache, 2.4 GHz, 35W TDP) Intel® Celeron® G3900TE (2M Cache, 2.3 GHz, 35W TDP)
Chipset	Intel® Q170 platform controller hub
Graphics	Integrated Intel® HD graphics 530 or 510 (CPU dependent)
Memory	Up to 32 GB DDR4-2133 SDRAM (two SODIMM slots)
AMT	Supports AMT 11.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	6x Gigabit Ethernet ports by Intel® I219 and 5x I210
PoE+	Optional IEEE 802.3at PoE+ PSE for GbE Port 3 to Port 6, 80 W total power budget
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports via native xHCI controller
USB 2.0	4x USB 2.0 ports
Video Port	1x stacked VGA + DVI-D 2x DisplayPort, supporting 4K2K resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 port (COM1 & COM3) 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)

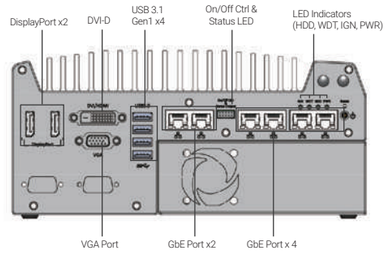
Expansion Bus		
PCI/PCI Express	2x PCIe x8 slot @ Gen3, 4-lanes PCIe signals in expansion Cassette	
Mini PCI-E	1x internal mini PCI Express socket with front-accessible SIM socket 1x internal mini PCI Express socket with internal SIM socket (mux with mSATA)	
Expandable I/O	1x MezIO® expansion port for Neousys' MezIO® modules	
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8 to 35V 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	3.7 kg	
Mounting	Wall-mount (standard) or DIN-rail mount (optional)	
Environmental		
Operating Temperature	-25°C to 70°C **	i7-6700TE (35W TDP) i5-6500TE (35W TDP) i3-6100TE (35W TDP) Pentium G4400TE (35W TDP)
	-25°C to 70°C */** (configured as 35W CPU mode) -25°C to 50°C */** (configured as 65W/ 51W CPU mode)	i7-6700 (65W/51W TDP) i5-6500 (65W/51W TDP) i3-6100 (65W/51W TDP)
Storage Temperature	-40°C to 85°C	
Humidity	10% to 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 EN55024 & EN55032	

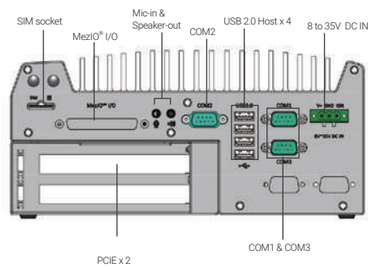
** For i7-6700 running at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading applied. Users can configure CPU power in BIOS to obtain higher operating temperature.*

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

Last updated: 15 - Jan 2020

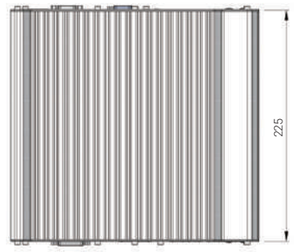
Appearance

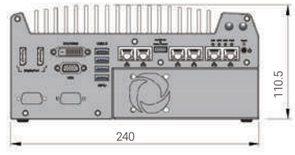




Dimensions

Unit : mm





▲ Nuvo-5026E

▲ Dual PCIe Cassette

Ordering Information

Model No.	Product Description
Nuvo-5026E	Intel® 6th-Gen Core™ fanless controller with dual PCIe Cassette, 6x GbE and MezIO® interface
Optional IEEE 802.3at PoE+ for GbE ports 3 to 6	

Optional Accessories

PA-160W-OW	160W AC/DC power adapter 20V/8A;18AWGx4C/120cm, cord end terminals for terminal block. operating temperature : -30 to 70 °C.
DINRAIL-O	DIN-rail mount assembly for Nuvo-5026E series
Dmpbr-Nuvo5000_7000	Neousys' patented damping bracket assembly for Nuvo-7000E/DE/P
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 usage
MezIO®-G4P	MezIO® module with 4x Gigabit 802.3at PoE+ ports *Only Nuvo-5026E-PoE supports MezIO-G4P*
MezIO®-G4	MezIO® module with 4x Gigabit Ethernet ports
MezIO®-U4	MezIO® module with 4x USB 3.1 ports

Nuvo-5501 Series

Intel® 6th-Gen Core™ i7/ i5/ i3 Compact Fanless Embedded Controller with 3x GbE

Key Features

- **Compact 221 x 173 x 76.2 mm footprint**
- **Supports Intel® 6th-Gen Core™ i7/ i5/ i3 LGA 1151 socket CPU**
- **Rugged, -25°C to 70°C wide temperature fanless operation**
- **3x GbE and 4x USB 3.1 ports**
- **2x RS-232/ 422/ 485 ports and 2x RS-232 ports**
- **VGA + DVI dual display outputs**
- **Accommodates one 3.5" HDD or 2.5" HDD/ SSD**
- **Optional 8-CH isolated DI and 8-CH isolated DO**

CE FC

Introduction

Nuvo-5501 series features compact fanless embedded controllers for the cost and space conscious. Based on Intel® Skylake platform, it is designed to provide cutting-edge performance and reliable operation in extreme environment. Its LGA 1151 socket offers users the flexibility to select a 35W CPU from Intel® 6th-Gen Core™ i to Celeron® lineup to suit application needs.

Nuvo-5501 is the most compact fanless embedded controller supporting Skylake LGA 1151 socket CPUs, measuring just 221 x 173 x 76.2 mm, it is easy to deploy in restricted spaces. In its compact enclosure, Nuvo-5501 features rich, front-accessible I/Os including 3x GbE, 4x USB 3.1 and 4x COM ports. There is even enough room for a 3.5" HDD, compatible with the latest storage capacities.

The compact Nuvo-5501 is a cost-effective solution that does not compromise on performance and reliability, making it the ideal embedded controller for various industrial applications.

Specifications

System Core	
Processor	- Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz, 35W TDP) - Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz, 35W TDP) - Intel® Core™ i3-6100TE (4M Cache, 2.7 GHz, 35W TDP) - Intel® Pentium® G4400TE (3M Cache, 2.4 GHz, 35W TDP) - Intel® Celeron® G3900TE (2M Cache, 2.3 GHz, 35W TDP)
Chipset	Intel® H110 platform controller hub
Graphics	Integrated Intel® HD 530/ 510 controller
Memory	Up to 16GB DDR4-2133 (single SODIMM slot)
I/O Interface	
Ethernet port	1x Gigabit Ethernet port (via Intel® I219-LM) 2x Gigabit Ethernet port (via Intel® I210-IT)
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	2x USB 2.0 ports
Video port	1x VGA 1x DVI-D
Serial Port	2x software-programmable RS-232/ 422/ 485 ports 2x RS-232 ports
Isolated DIO	8-CH isolated DI and 8-CH isolated DO (optional)
Storage Interface	
SATA HDD	1x internal SATA port for 3.5" HDD or 2.5" HDD/ SSD
mSATA	1x full-size mSATA socket

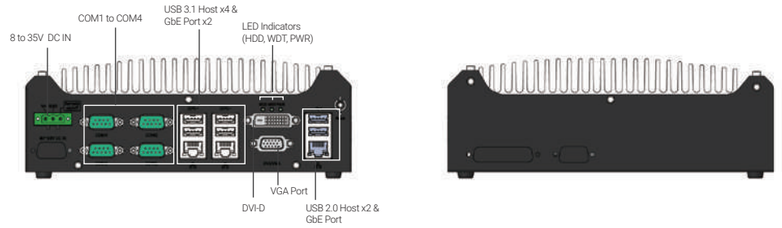
Expansion Bus/ Internal I/O Interface	
mini-PCIe	1x full-size mini PCI Express socket
M.2	1x M.2 B key socket for 3G/ 4G options with SIM socket
USB	1x internal USB 2.0 port
Remote Ctrl. & Status Output	1x 2x6-pin 2.0mm pin-header connector for remote on/off control and status LED output
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input
Mechanical	
Dimension	221 mm (W) x 173 mm (D) x 76 mm (H)
Weight	2.8 Kg
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	-25°C to 70°C */**
Storage Temperature	-40°C to 85°C
Humidity	10% to 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 & EN 55032

** For i7-6700 running 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 obtain higher operating temperature.*

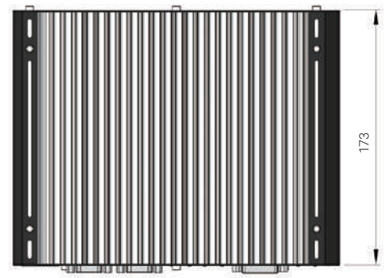
*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

Last updated: 15 - Jan 2020

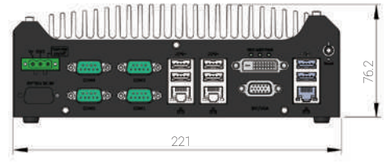
Appearance



Dimensions



Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-5501	Intel® 6th-Gen Core™ compact fanless embedded controller with 3x GbE
Nuvo-5501-DIO	Intel® 6th-Gen Core™ compact fanless embedded controller with isolated DIO & 3x GbE

Optional Accessories

DINRAIL-31	DIN-rail mount assembly for Nuvo-5501 series
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C.

Nuvo-2600 Series

Intel® Elkhart Lake Atom® x6425E Fanless Box-PC with 4x PoE+, 7/15mm 2.5" HDD and PCIe Expansion Cassette

CE FC

Key Features

- **Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/ 3.0GHz 12W processor**
- **Rugged -25°C to 70°C fanless operation**
- **4x Gigabit PoE+ ports via RJ-45 connector with screw-lock**
- **1x isolated RS-485 port and 1x RS-422/485 or 3x 3-wire RS-232 ports**
- **2x full-size mini-PCIe sockets and 1x M.2 3042/3052 B key**
- **1x front-accessible 2.5" SATA SSD tray (up to 15mm height) and 1x M.2 2280 SATA**
- **1x patented Cassette for single-slot PCIe card (Nuvo-2600E), or 1x 2500 watt-second SuperCAP UPS (Nuvo-2600J)**
- **8V to 35V wide-range DC input with remote control and optional ignition power control**

Introduction

The Nuvo-2600 series is an Intel® Elkhart Lake Atom® fanless box-PC with flexible expansions to fulfill versatile factory automation and machine vision applications that require a compact footprint, Gigabit PoE+ capability, and front-accessible data storage with CPU performance at 12W of low power consumption.

Powered by Intel® Elkhart Lake Atom® x6425E quad-core CPU, the Nuvo-2600 series delivers 320% CPU performance improvement compared with our previous Nuvo-2500E series. The Nuvo-2600 series has four Gigabit PoE+ and one USB 3.1 port with screw-lock mechanisms to secure camera connections. In addition to its internal M.2 2280 SATA SSD for system storage, Nuvo-2600 has one front-accessible 2.5" HDD tray accommodating a 7-15mm 2.5" SSD/HDD up to 5TB in storage capacity. It also has one isolated RS-485 port and isolated DIO to provide robust connections with industrial devices. For internal expansion, the Nuvo-2600 series provides two mini-PCIe sockets and one M.2 3042/3052 B Key socket to support 4G/ 5G mobile broadband.

To meet diverse deployment requirements, the Nuvo-2600 series comes in two variants. The Nuvo-2600E has a PCIe Cassette for an additional PCIe card, e.g., USB or GbE frame grabber, isolated DIO, or industrial communication card. While Nuvo-2600J has an integrated SuperCAP UPS that can withstand power interruption or voltage fluctuation in industrial environments. Featuring Intel Elhart Lake Atom® quad-core CPU, wide temperature operation, industrial I/O interfaces, and expansion Cassette module, Nuvo-2600 series is the perfect, multi-purpose fanless box-PC for factory automation and machine vision applications.

Specifications

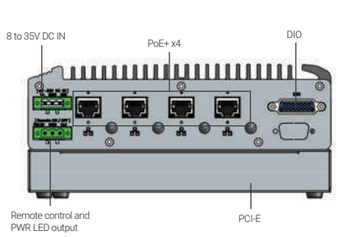
System Core	
Processor	Intel® Atom® x6425E quad-core 2.0GHz/3.0GHz 12W processor
Graphics	Integrated Intel® UHD Graphics
Memory	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports fTPM 2.0
Panel I/O Interface	
Ethernet port	4x Gigabit Ethernet ports via RJ-45 connectors by Intel® I210 with screw-lock
PoE Capability	In compliant with IEEE 802.3at PoE+ PSE, maximum 25.5W output on single PoE+ port. Total PoE+ power budget: 100W
Video Port	VGA and DVI dual display outputs via DVI-I connector
USB 3.1	1x USB 3.1 Gen1 (5 Gbps) ports with screw-lock
USB 2.0	2x USB 2.0 port with screw-lock
Serial Port	1x isolated RS-485 port with 15 kV ESD protection (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 (COM2)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Internal I/O Interface	
PCIe	1x PCIe x4 slot @ 2-lane PCIe 3.0 signal in Cassette (Nuvo-2600E only)
Mini-PCIe	1x full-size mini PCI Express socket with PCIe and USB 2.0 signal 1x full-size mini PCI Express socket with USB 2.0 signal
M.2 B key	1x M.2 3042/3052 B key (USB 3.1 + USB 2.0) for 4G/5G module with dual internal micro SIM socket
Storage Interface	
M.2 SATA	1x M.2 2280 M key (SATA interface only) socket for SATA SSD installation
SATA HDD	1x front-accessible HDD tray for 2.5" HDD/ SSD installation (up to 15mm height)

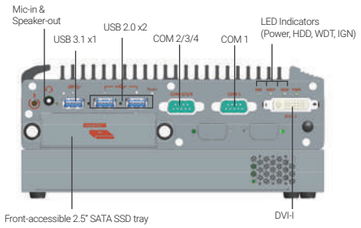
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input with optional ignition power control
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Power Backup	
Capacity	2500 watt-second (Nuvo-2600J only)
Mechanical	
Dimension	205 mm (W) x 155 mm (D) x 86 mm (H)
Weight	2.3 kg (Nuvo-2600E) 2.5 kg (Nuvo-2600J)
Mounting	Wall-mount bracket (optional)
Environmental	
Operating Temperature	-25°C to 70°C*
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.7, Category 4
Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

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

Last updated: 26 - Jun 2024

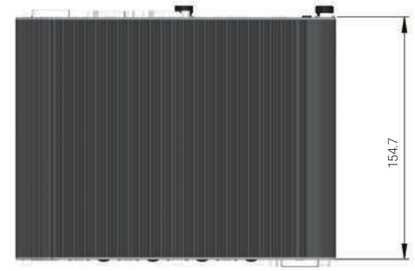
Appearance

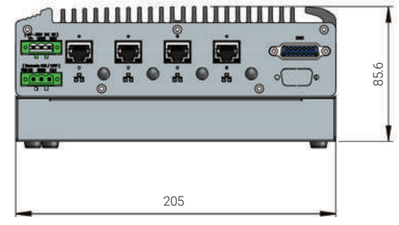




Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-2600E	Intel® Elkhart Lake Atom® x6425E fanless box PC with 4x GbE, 7/15mm 2.5" HDD and PCIe expansion Cassette
Nuvo-2600E-PoE	Intel® Elkhart Lake Atom® x6425E fanless box PC with 4x PoE+ GbE, 7/15mm 2.5" HDD and PCIe expansion Cassette
Nuvo-2600E-IGN	Intel® Elkhart Lake Atom® x6425E fanless box PC with 4x GbE, 7/15mm 2.5" HDD and PCIe expansion Cassette and ignition power control
Nuvo-2600E-PoE-IGN	Intel® Elkhart Lake Atom® x6425E fanless box PC with 4x PoE+ GbE, 7/15mm 2.5" HDD and PCIe expansion Cassette and ignition power control
Nuvo-2600J	Intel® Elkhart Lake Atom® x6425E fanless box PC with 4x GbE, 7/15mm 2.5" HDD and SuperCAP UPS
Nuvo-2600J-PoE	Intel® Elkhart Lake Atom® x6425E fanless box PC with 4x PoE+ GbE, 7/15mm 2.5" HDD and SuperCAP UPS
Nuvo-2600J-IGN	Intel® Elkhart Lake Atom® x6425E fanless box PC with 4x GbE, 7/15mm 2.5" HDD and SuperCAP UPS and ignition power control
Nuvo-2600J-PoE-IGN	Intel® Elkhart Lake Atom® x6425E fanless box PC with 4x PoE+ GbE, 7/15mm 2.5" HDD and SuperCAP UPS and ignition power control

Optional Accessories

PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
Wmkit-Nuvo-2600	Wall mounting kit for Nuvo-2600 and Nuvo-2610VTC series, including wall mounting brackets and screws
Fankit-25	Single fan kit for the PCIe cassette of Nuvo-2600 and Nuvo-2610VTC series, including one 25x25mm fan and screws

Nuvo-10000 Series

Intel® 14th/ 13th/ 12th-Gen Core™ i9/ i7/ i5/ i3 Expansion Box-PC with up to 7 PCIe/ PCI Slots

Key Features

- **Supports Intel® 14th/ 13th/ 12th-Gen Core™ i9/ i7/ i5/ i3, Pentium® and Celeron® LGA 1700 CPU**
- **Compact footprint with up to seven expansion slots**
  - **Two x16 PCIe, three x8 PCIe and two x4 PCIe slots (Nuvo-10007)**
  - **Two x16 PCIe, two x8 PCIe and three PCI slots (Nuvo-10034)**
  - **One x16 PCIe and two x8 PCIe slots (Nuvo-10003)**
- **8x USB 3.2 Gen2 ports with screw-lock**
- **1x 2.5G and 1GbE ports with screw-lock**
- **DP++ / HDMI™ 1.4b dual display outputs**
- **2x 2.5" SATA HDD/ SSD accommodation support RAID control**
- **Supports single NVIDIA® GPU card with up to 115W TDP**

Introduction

Nuvo-10000 series is the ideal choice to replace your bulky rack-mount or wall-mount IPC systems. The system offers up to seven PCIe/ PCI slots in its compact chassis to deliver the same level of expandability as off-the-shelf 4U 19" IPCs. Users can install a wide variety of AIO, DIO, communication, image capture and motion control cards for versatile applications.

Leveraging Intel® 14th/ 13th/ 12th-Gen Core™ i desktop processors with Q670E chipset, Nuvo-10000 series delivers exceptional computing power over traditional IPCs in a comparatively compact size with a competitive price. It features eight USB 3.2 ports with screw-lock mechanism for USB3 cameras. There is one GbE, one 2.5 GbE, 5 COM ports, and accommodates two 2.5" HDDs/ SSDs with the addition of an internal SATA port for a third HDD/SSD. The system can also support a 115W NVIDIA® GPU to offer significant AI computing power for modern deep-learning applications.

Driven by the increasing demand for industrial IoT, vision inspection and machine automation, Nuvo-10000 series is a flexible all-around rugged solution that can satisfy various industrial applications. With an assortment of I/O ports and flexible 7-slot PCIe/ PCI expandability, Nuvo-10000 series is geared for the fifth industrial revolution.

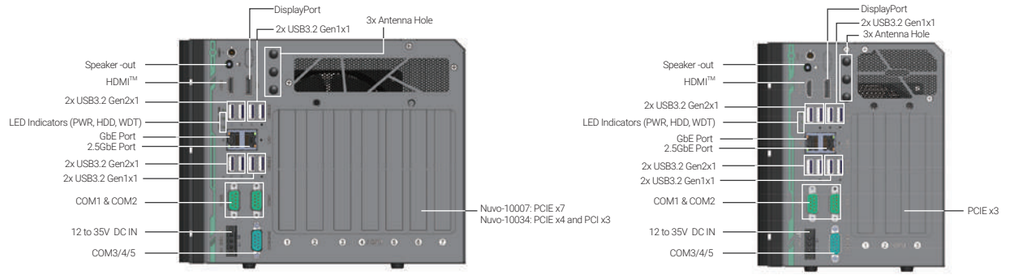
Specifications

	Nuvo-10007	Nuvo-10034	Nuvo-10003
System Core			
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T		
	Supporting Intel® 13th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-13900E/ i9-13900TE / i9-12900E/ i9-12900TE/ - 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	CPU dependent Integrated Intel® UHD graphics 770 (32EU)/ 730 (24EU)		
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)		
AMT	Supports Intel vPro/ AMT 16.0		
TPM	Supports dTPM 2.0		
I/O Interface			
Ethernet	1x 2.5G Ethernet port by I226-IT 1x Gigabit Ethernet port by I219-LM		
Video Port (Integrated Graphics)	1x HDMI™ 1.4b, supporting 3840 x 2160 resolution 1x DisplayPort, supporting 4096 x 2304 resolution		
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 3x 3-wire RS-232 ports (COM3/ COM4/ COM5)		
USB 3.2	4x USB 3.2 Gen2 (10 Gbps) ports 4x USB 3.2 Gen1 (5 Gbps) ports		
USB 2.0	1x USB 2.0 port with Type-A connector (internal)		
Audio	1x 3.5 mm jack for mic-in and speaker-out		

	Nuvo-10007	Nuvo-10034	Nuvo-10003
Storage Interface			
SATA HDD/ SSD	2x SATA ports for internal 2.5" HDD/ SSD installation (support RAID 0/ 1)		
M.2 M key	1x M.2 2280 SATA interface		
Internal Expansion Bus			
PCI Express	2x PCIe x16 slot @ Gen3, 8-lanes 3x PCIe x8 slot @ Gen3, 4-lanes 2x PCIe x4 slot @ Gen3, 2-lanes	2x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slot @ Gen3, 4-lanes	1x PCIe x16 slot @Gen3, 16-lanes 2x PCIe x8 slot @ Gen3, 4-lanes
PCI	-	3x 33MHz/ 32-bit 5V PCI slots	-
Mini PCI Express	2x full-size mini PCI Express socket with internal micro SIM socket		
Power Supply			
DC Input	1x 3-pin pluggable terminal block for 12 to 35V DC input		
Remote Ctrl. & LED Output	1x 10-pin (2x5) wafer connector for remote on/off control and status LED output		
Mechanical			
Dimension	241mm (W) x 280 mm(D) x 188mm (H)		157mm (W) x 280 mm(D) x 188mm (H)
Weight	5.2kg		4.2kg
Mounting	Wall-mount (standard)		
Environmental			
Operating Temperature	-25°C to 60°C*		
Storage Temperature	-40°C to 85°C		
Humidity	10% to 90% , non-condensing		
Vibration	Operating, MIL-STD-810H, Method 514.8, Category 4		
Shock	Operating, MIL-STD-810H, Method 516.8, Procedure I		
EMC	CE/FCC Class A, according to EN 55032 & EN 55035		

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

Last updated: 26 - Apr 2024



Dimensions

Unit : mm

Nuvo-10007/ 10034

Nuvo-10003

Ordering Information

Model No.	Product Description
Nuvo-10007	Intel® 14/ 13/ 12th-Gen Core™ i9/ i7/ i5/ i3 Expansion Box-PC with 7x PCIe slots
Nuvo-10034	Intel® 14/ 13/ 12th-Gen Core™ i9/ i7/ i5/ i3 Expansion Box-PC with 4x PCIe and 3x PCI slots
Nuvo-10003	Intel® 14/ 13/ 12th-Gen Core™ i9/ i7/ i5/ i3 Expansion Box-PC with 3x PCIe slots

Optional Accessories

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.
PA-600W-ENC	600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.
Cbl-W212F-W210F-23CM	Cable Wafer 2.0 Female 12P to 10P, Length: 23cm

Nuvo-8034 Series

Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 Expansion Box-PC with 7 PCIe/ PCI Expansion Slots

Key Features

- **Supports Intel® 9th/ 8th-Gen Core™ i7/ i5 /i3 LGA1151 CPU**
- **Two x16 PCIe, two x8 PCIe, and three PCI slots**
- **Supports single NVIDIA® GPU card with up to 180W TDP**
- **8-ch isolated DI and 8-ch isolated DO**
- **2x GbE ports with screw-lock**
- **4x USB 3.1 Gen2 and 4x USB 3.1 Gen1 ports with screw-lock**
- **Two front-accessible, hot-swappable 2.5" SATA HDD/ SSD with RAID 0/ 1 support**
- **M.2 2280 M key NVMe (Gen3 x4) for fast storage access**

Introduction

Nuvo-8034 is a new-breed of box-PC offering 7 expansion slots in a comparatively compact size. Of its four PCIe slots, two are x16 slots (@Gen3, 8-lanes) connected directly to the CPU PEG port to deliver up to 8 GB/s bandwidth for GPU and high speed I/O cards, and two are x8 slots (@Gen3, 4-lanes) from PCH for general-purpose usage. The system is capable of accmmodating one 180W NVIDIA® GPU for modern AI applications. Additionally, there are 3 PCI slots to support legacy PCI cards for general industrial usage.

Nuvo-8034 supports Intel® 9th/ 8th-Gen Core™ i processor with workstation-grade Intel® C246 chipset to offer superior computing power. Utilizing Neousys' distinctive power design, Nuvo-8034 can handle heavy power consumption of multiple PCIe and PCI expansion cards with 8 to 35V wide-range DC input. The system features two hot-swappable trays that support 2.5" SATA SSD/ HDD on the front panel with RAID 0/ 1 support, making it easier to access when placed inside a cabinet. External I/O wise, Nuvo-8034 offers 8-channel isolated DI and 8-channel isolated DO for industrial automation, eight USB 3.1 Gen1/ Gen2 ports with screw-lock for USB3 cameras.

With an assortment of I/O ports and flexible 7-slot PCIe/ PCI expandability, Nuvo-8034 is an all-around rugged solution that can satisfy various industrial applications such as machine vision, industrial automation and data analytics.

Specifications

System Core	
Processor	Supporting Intel® Xeon® E and 9th/ 8th - Gen CPU (LGA1151 socket) - Intel® Xeon® Processor E-2176G/ E-2124G/ E-2278GE/ E-2278GEL - Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T - Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T - Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
Chipset	Intel® C246 platform controller hub
Graphics	Independent GPU via x16 (@ x8 signals) PEG port, or integrated Intel® UHD graphics 630
Memory	Up to 128 GB ECC/ non-ECC DDR4 2133 SDRAM (four SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM with screw-lock 1x Gigabit Ethernet port by Intel® I210-IT with screw-lock
Video Port	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4) (optional)
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports with screw-lock 4x USB 3.1 Gen1 (5 Gbps) ports with screw-lock
USB 2.0	1x USB 2.0 port (internal use)
Isolated DIO	8x isolated DI and 8x isolated DO
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA HDD/ SSD	2x hot-swappable trays for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory

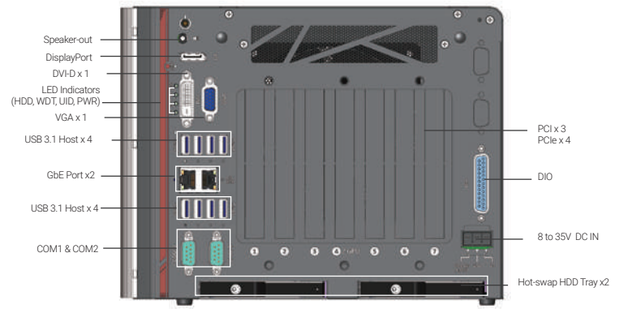
Storage Interface	
mSATA	2x full-size mSATA port (mux with mini-PCIe)
Internal Expansion Bus	
PCI Express	2x PCIe x16 slot@Gen3, 8-lanes 2x PCIe x8 slots@Gen3, 4-lanes
PCI	3x 33MHz/ 32-bit 5V PCI slots
M.2	1x M.2 2242 B key socket supporting dual SIM mode with selected M.2 LTE module
mini-PCIe	2x full-size mini PCI Express socket with internal SIM socket (mux. with mSATA)
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input
Remote Ctrl.	1x 3-pin pluggable terminal block for remote control
Mechanical	
Dimension	259mm(W) x 280mm(D) x 198mm(H)
Weight	7kg
Mounting	Wall-mount
Environmental	
Operating Temperature	-25°C to 60°C with 100% CPU/ GPU loading
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55024

** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*

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

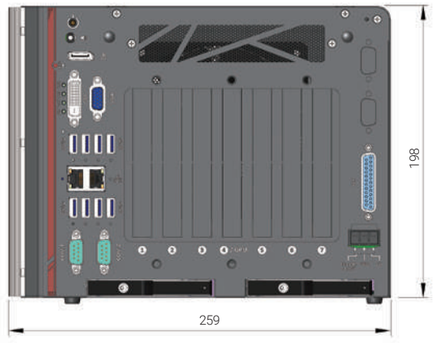
Last updated: 17 - Mar 2021

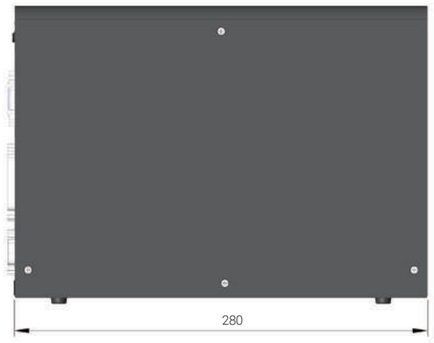
Appearance



Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-8034	Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 embedded computer with 2x PCIe x16(@ x8 signals), 2x PCIe x8(@ x4 signals) and 3x PCI slots

Optional Accessories

PA-160W-OW	160W AC-DC power Adapter, 20V 8A , 90 to 264VAC 127 to 370VDC, Open-Wire Terminal, -30°C to 70°C
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
PA-480W-DIN	480W AC-DC power Adapter(SDR-480-24) DIN-rail mount, 24V 20A, 90 to 264VAC/127 to 370VDC, Terminal Block, -20°C to 70°C
Cbl-IDC210F-DB9M-20CM	10Pin Female to DB9 Male Cable, 20CM

Nuvo-8000 Series

Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 Expansion Box-PC with up to 5 PCIe/ PCI Slots

Key Features

- **Supports Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3, Pentium® and Celeron® LGA1151 CPU**
- **Up to five expansion slots, a mixed combination of x16 PCIe, x4 PCIe, and PCI slots**
- **Dedicated heat dissipation for -25°C to 60°C wide-temperature operation**
- **2x GbE, 4x USB 3.1 Gen1 and 5x COM ports**
- **Dual DVI display outputs**
- **Up to 2x 2.5" SATA HDD/ SSD accommodation and 1x mSATA socket**
- **Wall-mounting and rack-mounting available**

Introduction

Nuvo-8000 series systems are cost-effective box-PCs with up to 5 expansion slots that can perfectly replace your bulky rack-mount or wall-mount IPC systems. Leveraging Intel® 9th/ 8th-Gen Core™ i desktop processor with H310 chipset, it delivers the same computing power as traditional IPCs but in a much more compact footprint with a budgetary price.

There are four models in the Nuvo-8000 series with various expansion configurations. Customers can choose from a compact 3-slot PCIe system to a 5-slot system with up to three PCIe slots or up to four PCI slots, that best suit their industrial automation or machine vision application needs. It features front-accessible I/Os including two GbE, four USB 3.1 Gen1 and five COM ports that make it easier to access when it is rack-mounted or placed inside a cabinet. Storage wise, Nuvo-8000 series systems have two 2.5" SATA SSD/ HDD and one mSATA socket to support various storage devices. The system can also support a 125W NVIDIA® GPU to offer TFLOPS computing power for modern deep-learning applications.

Nuvo-8000 series systems are designed with satisfying industrial demands in mind. Retaining traditional IPC expansion capabilities and fulfilling diverse application requirements in an extremely compact form-factor with industrial-grade reliability.

Specifications

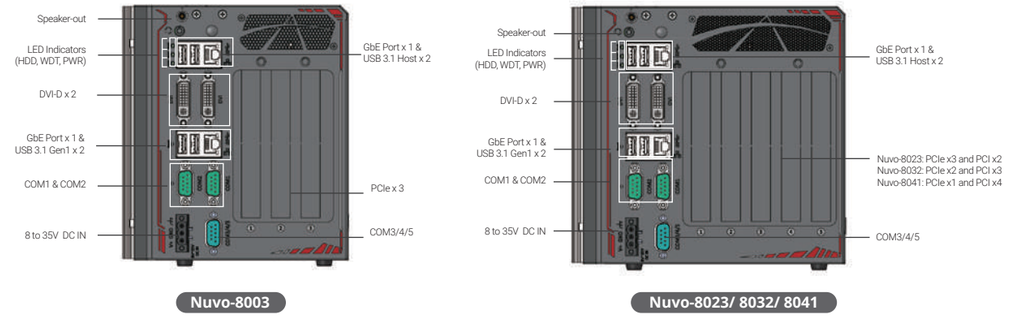
	Nuvo-8003	Nuvo-8023	Nuvo-8032	Nuvo-8041
System Core				
Processor	Supporting Intel® 9th/ 8th-Gen Core™ CPU (LGA1151 socket) - Intel® Core™ i7-9700TE/ i7-8700*/ i7-8700T - Intel® Core™ i5-9500TE/ i5-8500*/ i5-8500T - Intel® Core™ i3-9100TE/ i3-8100*/ i3-8100T - Intel® Pentium® G5400T (4M Cache, 3.1GHz, 35W TDP) - Intel® Celeron® G4900T (2M Cache, 2.9GhHz, 35W TDP)			
Chipset	Intel® H310 platform controller hub			
Graphics	Integrated Intel® UHD Graphics 630, or independent 125W GPU via x16 PEG port			
Memory	Up to 32 GB DDR4 2666 SDRAM (one SODIMM slot)			
I/O Interface				
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT			
Video Port (Integrated Graphics)	2x DVI-D connectors, each supporting 1920x1200 resolution			
Serial Port	1x software-programmable RS-232/ 422/ 485 ports (COM1) 1x software-programmable RS-422/ 485 ports (COM2) 3x 3-wire RS-232 ports (COM3/ COM4/ COM5)			
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports			
USB 2.0	1x USB 2.0 port with Type-A connectors(internal) 2x USB 2.0 port with 2x8 pins box header(internal)			
Audio	1x 3.5 mm jack for mic-in and speaker-out			
Storage Interface				
SATA HDD	2x internal SATA ports for 2.5" HDD/ SSD installation			
mSATA	1x full-size mSATA port (SATA + USB 2.0 + USIM)			

	Nuvo-8003	Nuvo-8023	Nuvo-8032	Nuvo-8041
Expansion Bus				
PCI Express	**1x PCIe x16 slot** @Gen3, 16-lanes **1x PCIe x8 slot** @Gen2, 4-lanes **1x PCIe x4 slot** @Gen2, 1-lane	**1x PCIe x16 slot** @Gen3, 16-lanes **1x PCIe x4 slot** @Gen2, 2-lanes **1x PCIe x4 slot** @Gen2, 1-lane	**1x PCIe x16 slot** @Gen3, 16-lanes **1x PCIe x8 slot** @Gen2, 4-lanes	**1x PCIe x16 slot** @Gen3, 16-lanes
PCI	-	**2x** 33MHz/ 32-bit 5V PCI slots	**3x** 33MHz/ 32-bit 5V PCI slots	**4x** 33MHz/ 32-bit 5V PCI slots
Power Supply				
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input			
Mechanical				
Dimension	154 mm (W) x 235 mm (D) x 174 mm (H)	185 mm (W) x 235 mm (D) x 174 mm (H)		
Weight	3 Kg	3.6 Kg		
Mounting	Wall-mount (standard) DIN-Rail mounting (optional) Rack-mount (optional)			
Environmental				
Operating Temperature	-25°C to 60°C			
Storage Temperature	-40°C to 85°C			
Humidity	10% to 90% , non-condensing			
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4			
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II			
EMC	CE/FCC Class A, according to EN55032 & EN55035			
Safety	BSMI (CNS 15598-1), Nuvo-8003-BSMI only			

** Due to thermal limitations, 65W CPUs will be configured to operate in 35W mode by default.*

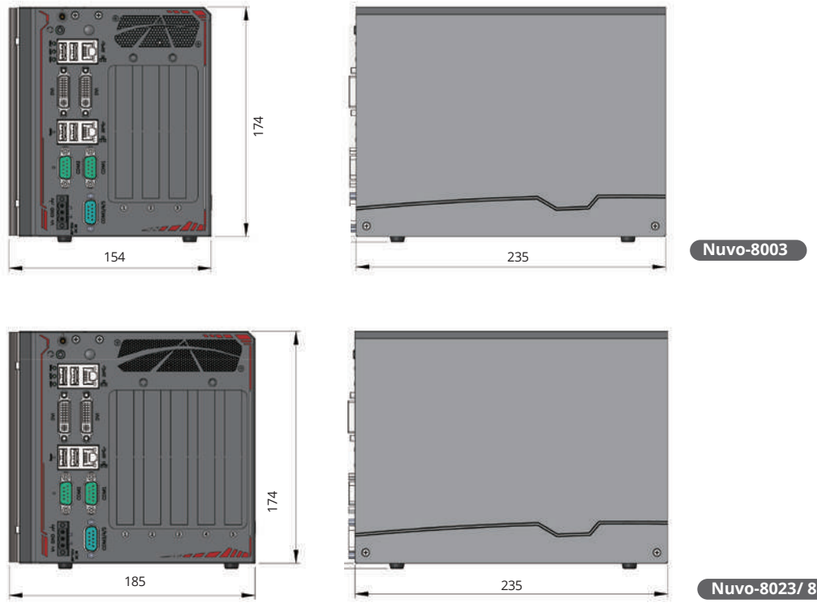
Last updated: 20 - Sep 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-8003	Intel® 9/ 8th-Gen Core™ i7/ i5/ i3 fanless rugged Box-PC with 3x PCIe expansion slots
Nuvo-8023	Intel® 9/ 8th-Gen Core™ i7/ i5/ i3 fanless rugged Box-PC with 3x PCIe and 2x PCI expansion slots
Nuvo-8032	Intel® 9/ 8th-Gen Core™ i7/ i5/ i3 fanless rugged Box-PC with 2x PCIe and 3x PCI expansion slots
Nuvo-8041	Intel® 9/ 8th-Gen Core™ i7/ i5/ i3 fanless rugged Box-PC with 1x PCIe and 4x PCI expansion slots
Nuvo-8003-BSMI	Intel® 9th-Gen Core™ i7-9700TE fanless rugged Box-PC with 3x PCIe expansion slots, 280W AC/DC power adapter, and BSMI certified

Optional Accessories

PA-120W-OW	120W AC/ DC power adapter 20V/ 6A; 18AWG/ 120cm; cord end terminals for terminal block, operating temperature : -30°C to 70 °C
PA-160W-OW	160W AC/DC power adapter 20V/ 8A; 18AWGx4C/ 120cm, cord end terminals for terminal block, operating temperature : -30°C to 70 °C
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
Fankit-92	Fan assembly for Nuvo-8000, 92x92x25 mm
Rmkit-Nuvo6000	Rack mounting assembly for Nuvo-6000/ 8000 series

Nuvo-8111 Series

Cost-effective AI Platform for Factory Automation Supporting NVIDIA® 200W GPU and Intel® 9th/ 8th-Gen Core™ Processor

Key Features

- **Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3, Pentium® and Celeron® LGA1151 CPU**
- **Supports NVIDIA® GPU up to 200W TDP**
- **An additional x4 PCIe, and a PCI slot for add-on cards**
- **-25°C to 60°C wide-temperature operation**
- **2x GbE, 4x USB 3.1 Gen1 and 5x COM ports**
- **Dual DVI display outputs**
- **Up to 2x 2.5" SATA HDD/ SSD accommodation and 1x mSATA socket**

Introduction

Nuvo-8111 series is a cost-effective box-PC with 3 expansion slots designed specifically to support an advanced mid to high-end 200W NVIDIA® graphics card, such as an RTX™ 3060/ 3060 Ti, to offer stunning edge AI performance. Offering tremendous GPU power up to 20 TFLOPS in FP32 for emerging GPU-accelerated applications, they boost the performance and efficiency of factory automation, image recognition, product inspection, pick and place robots, etc.

Nuvo-8111 series leverages an Intel® 9th/ 8th-Gen Core™ processor with H310 chipset. It has one x16 Gen3 PCIe slot for accommodating a GPU card, and an additional x4 PCIe and a PCI slot for industrial I/O cards such as DIO, AIO, communication or motion control card. It features front-accessible I/Os including two GbE, four USB 3.1 Gen1 and five COM ports for easy access when it is rack-mounted or placed inside a cabinet. Storage-wise, the system supports two 2.5" SATA SSDs/ HDDs plus one mSATA socket to house an mSATA SSD.

As edge AI demand continues to grow for traditional production and factory automation, Neousys Nuvo-8111 seeks to fulfill this need. With mid to high-end GPU support, expansion capability, compact and rugged design that plays an important role in bringing artificial intelligence to the edge and factory floors, the Nuvo-8111 is no doubt the most cost-effective AI platform for automation in its class!

Specifications

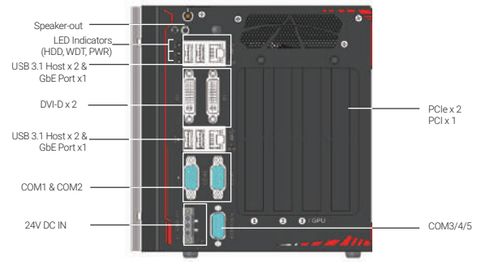
System Core	
Processor	Supporting Intel® 9th/ 8th-Gen Core™ CPU (LGA1151 socket) - Intel® Core™ i7-9700TE/ i7-8700*/ i7-8700T - Intel® Core™ i5-9500TE/ i5-8500*/ i5-8500T - Intel® Core™ i3-9100TE/ i3-8100*/ i3-8100T - Intel® Pentium® G5400T (4M Cache, 3.1GHz, 35W TDP) - Intel® Celeron® G4900T (2M Cache, 2.9GhHz, 35W TDP)
Chipset	Intel® H310 platform controller hub
Graphics	Integrated Intel® UHD graphics 630, or independent NVIDIA® RTX™ 3060/ 3060 Ti via x16 PEG port
Memory	Up to 32 GB DDR4 2666 SDRAM (one SODIMM slots)
I/O Interface	
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT
USB 2.0	1x USB 2.0 port with Type-A connector (internal) 2x USB 2.0 port with 2x8 pins box header (internal)
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports
Video Port	2x DVI-D connector, supporting 1920 x 1200 resolution
Serial Port	1x software-programmable RS-232/ 422/ 485 port (COM1) 1x software-programmable RS-422/ 485 port (COM2) 3x 3-wire RS-232 ports (COM3/ COM4/ COM5)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA HDD	2x internal SATA ports for 2.5" HDD/ SSD installation
mSATA	1x full-size mSATA port (SATA + USB 2.0 + USIM)

Internal Expansion Bus	
PCI Express	1x PCIe x16 slot @Gen3, 16-lane (for GPU installation) 1x PCIe x4 slot @Gen2, 4-lane signal
PCI	1x 33MHz/ 32-bit 5V PCI slot
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 24V DC input
Mechanical	
Dimension	174 mm (W) x 330 mm (D) x 174 mm (H)
Weight	4.5 kg
Mounting	Optional wall-mount bracket
Environmental	
Operating Temperature	-25°C to 60°C**
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

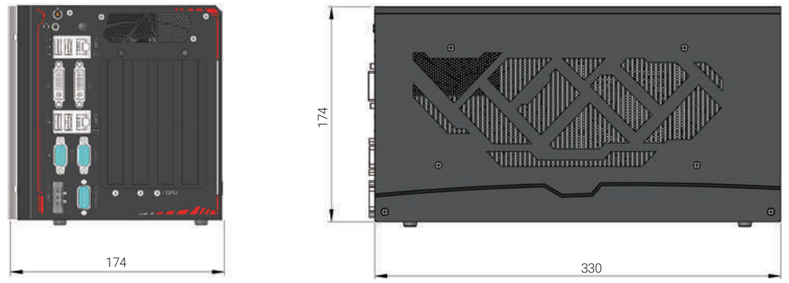
Last updated: 9 - Mar 2022

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-8111	Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 expansion box PC with 2x PCIe and 1x PCI, supporting NVIDIA® 200W graphics card

Optional Accessories

PA-280W-ET2	280W AC/DC power adapter 24V/11.67A; 16AWG/100cm; cord end terminals for terminal block, operating temperature : -30 to 60°C
Wmkit-H-Nuvo8111	Wall mounting assembly for Nuvo-8111 series, horizontal type

Nuvo-6000 Series

Intel® 6th-Gen Core™ i7/ i5/ i3 Expansion Box-PC with Up to 5 PCIe/ PCI Slots

CE FC

Key Features

- **Supports Intel® 6th-Gen Core™ i7/ i5/ i3, Pentium® and Celeron® LGA1151 CPU**
- **Up to five expansion slots**
  - **x16 PCIe, x8 PCIe and three PCI slots (Nuvo-6032)**
  - **x16 PCIe and x8 PCIe slots (Nuvo-6002)**
- **Rugged, -25 °C to 60 °C fanless operation**
- **2x GbE, 4x USB 3.1 and 5x COM ports**
- **Dual DVI display outputs**
- **Up to 3x 2.5" SATA HDD/SDD and 1x mSATA socket**
- **Wall-mounting, (optional DIN-rail and rack-mount)**
- **Optional fan with automatic temperature sensing and fan control**

Introduction

Nuvo-6000 series is the perfect replacement of your bulky rack-mount or wall-mount IPC systems. Leveraging Intel® 6th-Gen Skylake platform, It delivers the same computing power as traditional IPCs, but in a more compact form-factor and fanless operation.

Nuvo-6000 Series has up to 5-slot capacity that gives the same level of expandability as most IPCs. With different PCIe and PCI combination from 2 PCIe slots to 5 PCIe/PCI slots, Nuvo-6000 Series makes up four models for customers to choose. There must be one that best meets your industrial automation or machine vision application needs.

Nuvo-6000 series supports LGA1151 socket-type CPU, thus you can choose from Core™ i7 to Celeron® depending on your performance and cost consideration. The front-accessible I/O design, including 2 GbE, 4 USB 3.1 Gen1 and 5 COM ports, makes it easier to access your Nuvo-6000 when it's placed inside a cabinet or a rack.

Neousys' proven fanless design on Nuvo-6000 presents extraordinary reliability in all circumstances. And its versatile mounting options make it fit for desktop, cabinet or a 19" rack. With similar performance and cost, better form-factor and reliability, Nuvo-6000 series is speaking for itself on the new horizon of industrial computer.

Specifications

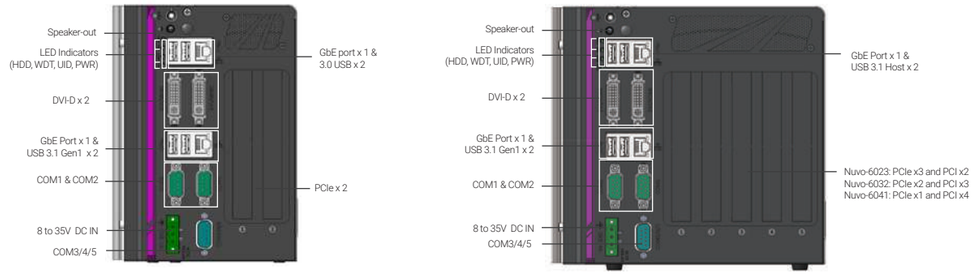
	Nuvo-6002	Nuvo-6032	Nuvo-6023	Nuvo-6041
System Core				
Processor	Supports Intel® 6th-Gen Core™, Pentium® and Celeron® LGA1151 CPU Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz, 35W TDP) Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz, 35W TDP) Intel® Core™ i3-6100TE (4M Cache, 2.7 GHz, 35W TDP) Intel® Pentium® G4400TE (3M Cache, 2.4 GHz, 35W TDP) Intel® Celeron® G3900TE (2M Cache, 2.3 GHz, 35W TDP)			
Chipset	Intel® H110 platform controller hub			
Graphics	Integrated Intel® HD 530/ 510 controller			
Memory	Up to 16 GB DDR4-2133 (single SODIMM slot)			
I/O Interface				
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT			
Video Port	2x DVI-Ds for DVI outputs, supporting 1920x1200 resolution			
Serial Port	1x software-programmable RS-232/ 422/ 485 ports (COM1) 1x software-programmable RS-422/ 485 ports (COM2) 3x 3-wire RS-232 ports (COM3/ COM4/ COM5)			
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports			
Audio	1x Speaker-out			
Storage Interface				
SATA HDD	1x SATA port for 2.5" HDD/ SSD installation	3x SATA ports for 2.5" HDD/ SSD installation		
mSATA	1x full-size mSATA port (mux with mini-PCIe)			

** For i7-6700 running 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 obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

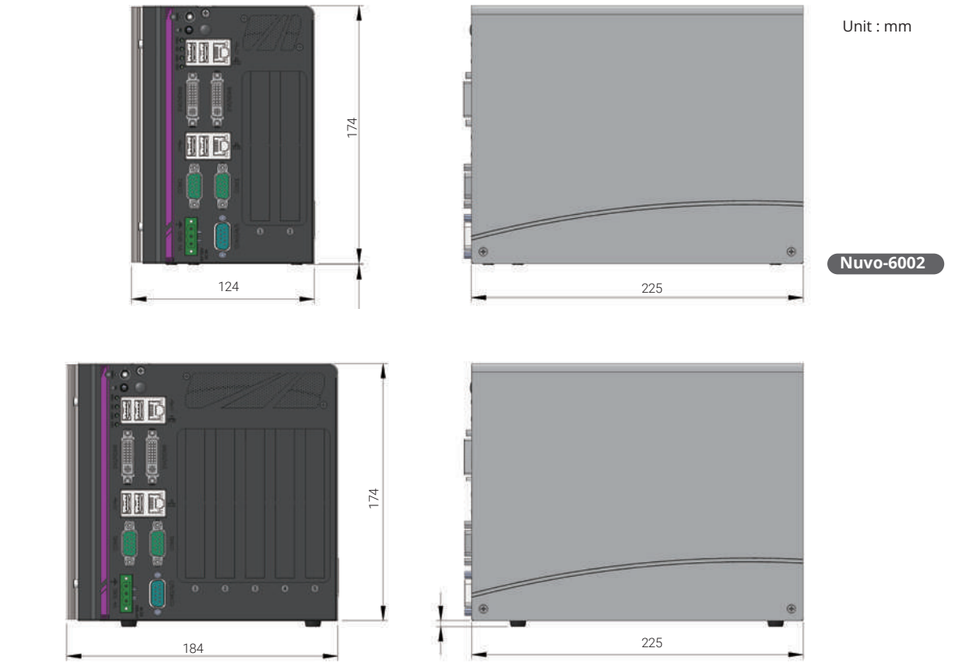
	Nuvo-6002	Nuvo-6032	Nuvo-6023	Nuvo-6041
Expansion Bus				
PCI Express	**1x PCIe x16 slot** @ Gen3, 16-lanes **1x PCIe x8 slot** @ Gen2, 4-lanes	**1x PCIe x16 slot** @ Gen3, 16-lanes **1x PCIe x8 slot** @ Gen2, 4-lanes	**1x PCIe x16 slot** @Gen3, 16-lanes **1x PCIe x4 slots** @Gen2, 2-lanes **1x PCIe x4 slots** @Gen2, 1-lane	**1x PCIe x16 slot** @Gen3, 16-lanes
PCI	-	**3x** 33MHz/ 32-bit 5V PCI slots	**2x** 33MHz/ 32-bit 5V PCI slots	**4x** 33MHz/ 32-bit 5V PCI slots
mSATA	1x full-size mSATA socket (mux with USB 2.0 signals)			
Power Supply				
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input			
Mechanical				
Dimension	124 mm (W) x 225 mm (D) x 174 mm (H)	184 mm (W) x 225 mm (D) x 174 mm (H)		
Weight	2.8 Kg	3.5 Kg		
Mounting	Wall-mount (standard), DIN-rail mount (optional) or Rack-mount (optional)			
Environmental				
Operating Temperature	-25°C to 60°C			
Storage Temperature	-40°C to 85°C			
Humidity	10% to 90% , non-condensing			
Vibration	Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64)		Operating, MIL-STD-810G, Method 514.6, Category 4	
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, according to IEC60068-2-27)		Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	
EMC	CE/FCC Class A, according to EN 55022, EN 55024 & EN 55032		CE/FCC Class A, according to EN55032 & EN55035	

Last updated: 13 - Oct 2020

Appearance



Dimensions



Ordering Information

Model No.	Product Description
Nuvo-6002	Intel® 6th-Gen Core™ fanless Box-PC with 1x PCIe x16 slot and 1x PCIe x8 (@ x4 signals) slot
Nuvo-6032	Intel® 6th-Gen Core™ fanless Box-PC with 1x PCIe x16 slot, 1x PCIe x8 (@ x4 signals) slot and 3x PCI slots
Nuvo-6023	Intel® 6th-Gen Core™ fanless Box-PC with 3x PCIe slot and 2x PCI slots
Nuvo-6041	Intel® 6th-Gen Core™ fanless Box-PC with 1x PCIe and 4x PCI slots

Optional Accessories

PA-120W-OW	120W AC/ DC power adapter 20V/ 6A; 18AWG/ 120cm; cord end terminals for terminal block, operating temperature : -30°C to 70 °C
PA-160W-OW	160W AC/DC power adapter 20V/ 8A; 18AWGx4C/ 120cm, cord end terminals for terminal block, operating temperature : -30°C to 70 °C
Fankit-80	Fan assembly for Nuvo-6000 series, 80x80x15 mm
Cbl-DB9F-3DB9M-15CM	1x DB9 (female) to 3x DB9 (male), for Nuvo-6000 series, length: 15CM
DINRAIL-E	DIN-rail mount assembly for Nuvo-6000 series
Rmkit-Nuvo6000	Rack mounting assembly for Nuvo-6000/ 8000 series

Nuvo-2822

Intel® Alder Lake N Compact Expansion Box-PC with 2x PCIE and 2x PCI slots

Key Features

- **Intel® Alder Lake N97 processor 12W with 4 E-Cores**
- **2x PCIe Slots and 2 PCI slots**
- **2x GbE, 2x USB3.2 and 2x USB2.0 ports**
- **1x M.2 2280 for storage, 1x RS232/422/485, 3x RS232**
- **1x DP++ & 1x HDMI™ 1.4b**
- **4-CH isolated DI + 4-CH isolated DO**
- **12 to 24V DC input, Ultra-Low Power Consumption during shutdown states**

CE FC

Introduction

Nuvo-2822 is a compact expansion box PC powered by an Intel® Alder Lake N CPU featuring two PCIe and two PCI slots. The expansion slots are designed to support various frame grabbers, motion control cards, COM port expansion cards, and data acquisition cards.

With up to five times the performance boost compared to our previous Nuvo-2400 series, the new Nuvo-2822 can efficiently process vast amounts of data acquired from extensive I/O interfaces in real time. It features two Ethernet ports with I210-IT controllers, and two USB 3.2 Gen 2 ports with screw lock mechanisms to connect and secure industrial cameras for machine vision applications. Furthermore, the Nuvo-2822 supports 8-channel isolated DIO and four COM ports to communicate with and control various industrial sensors, indicators, motors, and actuators.

The system also features a unique "Super Power Saving Mode" to minimize energy consumption when the system is in standby (S4/S5) mode, significantly reducing electricity usage. Thanks to its compact dimensions, it can be deployed in restricted spaces or small cabinets. With support for versatile PCIe and PCI expansion cards, it is ideal for industrial control and machine automation applications.

Specifications

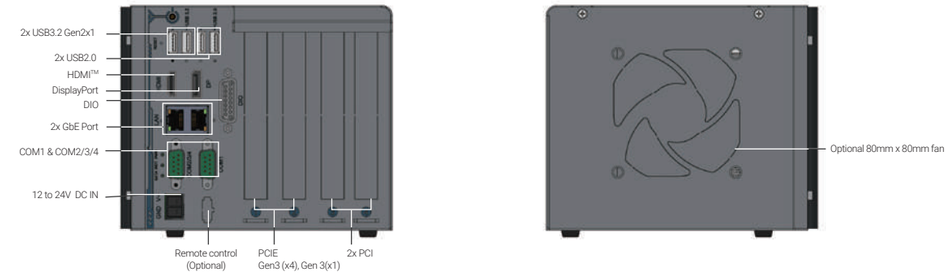
System Core	
Processor	Intel® Alder Lake N97 processor (4C/4T, 2.0 /3.6 GHz, 12W TDP)
Graphics	Integrated Intel® UHD Graphics with 24EUs
Memory	Up to 16 GB DDR5-4800 SDRAM (one SODIMM socket)
TPM	Supports dTPM 2.0
I/O Interface	
Ethernet	2x Gb Ethernet by Intel I210-IT (1x with WoL)
USB 3.2	2x USB 3.2 Gen2 ports with screw-lock
USB 2.0	2x USB 2.0 ports with screw-lock
Video Port	1x DP++, Supporting 4096 x 2160 resolution 1x HDMI™ 1.4b, Supporting 3840 x 2160 30Hz
Serial Port	1x Software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4)
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Storage Interface	
M.2 M Key	1x M.2 2280 SATA interface
Internal Expansion Bus	
PCI Express	1x PCIe x4 slot @ Gen3, 4-lanes 1x PCIe x4 slot @ Gen3, 1-lanes
PCI	2x 33MHz/ 32-bit 5V PCI slots

Power Supply	
DC Input	1x 2-pin pluggable terminal block for 12 to 24V DC input
Remote Ctrl. & LED Output	1x 10-pin (2x5) wafer connector for remote on/off control and status LED output
Mechanical	
Dimension	164.6mm (W) x 214.6mm (D) x 135.6mm (H)
Weight	2.3kg
Mounting	Wall-mount (Optional)
Fan	Optional 80mm x 80mm fan for system heat dissipation
Environmental	
Operating Temperature	With FAN Kit -10°C to 70°C [1][2] Without FAN Kit -10°C to 60°C [1]
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

[1] For sub-zero and over 60°C operating temperature, a wide temperature Solid State Disk (SSD) is required.
[2] The optional fan kit is recommended for operating at ambient temperatures higher than 60°C.

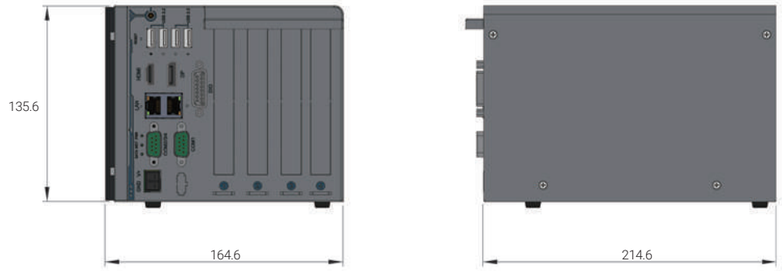
Last updated: 16 - Aug 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-2822	Intel® Alder Lake N97 Compact Expansion Box-PC with 2x PCIE and 2x PCI slots

Optional Accessories

PA-160W-OW	160W AC/DC power adapter 20V/ 8A; 18AWGx4C/ 120cm, cord end terminals for terminal block, operating temperature : -30°C to 70 °C
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
Wmkit-Nuvo2822	Wall mounting assembly for Nuvo-2822
AccsyBx-FAN-Nuvo-2822	Fan assembly for Nuvo-2822 series, 80x80x15 mm
Cbl-W212F-W210F-23CM	Cable Wafer 2.0 Female 12P to 10P, Length: 23cm

Nuvo-2700DS Series

AMD Ryzen™ V1000 Rugged 4x 4K Interactive Digital Signage System Supporting 2x Google Edge TPU

Key Features

- **AMD Ryzen™ embedded V1605B series quad-core 15W CPU**
- **Rugged -25°C to 70°C fanless operation**
- **4x 4K DP display, 3840 x 2160 resolution per output**
- **AI inference capability by 2x optional Edge TPU**
- **1x M.2 3042/3052 B-Key for 4G/5G module**
- **2x USB3.1 Gen 1 and 2x USB2.0**
- **8V to 35V wide-range DC input with built-in ignition power control**
- **Flexible power input options: mini-DIN or terminal block**

CE FC

Introduction

Nuvo-2700DS series is a rugged digital signage system with AI inference capability for personalized user experience and audience measurement. Powered by AMD Ryzen™ Embedded V1605B, it can output to four 4K displays and playback 4K H.265 videos at 60fps. By supporting two Google Edge TPUs, it delivers a total of 8 TOPS AI inference performance in a fanless compact form factor.

The wide operating temperature and fanless design make it ideal for 24/7 applications in harsh indoor and outdoor environments, such as flight information display system (FIDS) or train schedule board. Furthermore, Nuvo-2700DS can also be deployed for mobile applications due to the inclusion of ignition power control and full bandwidth support of WIFI 6, 4G LTE, and 5G network modules.

The support of two Google Edge TPUs empower Nuvo-2700DS as a smart digital signage player to leverage real-time camera input and AI computer vision models (e.g., YOLO-lite or PoseNet) to offer audiences an interactive and personalized experience. Besides, it can get to know its audience by collecting anonymous data from people counting, body gesture recognition, facial recognition, attention measurement, and emotion analysis.

The Nuvo-2700DS series signifies a new age of AI enabled digital signage player for harsh environments and mobile applications. You can utilize Nuvo-2700DS as a video wall player to playback to 4K ultra high definition visual displays or deploy Nuvo-2700DS as a low power fanless Edge AI platform for emerging AI applications. With AI inference from Google Edge TPUs, Nuvo-2700DS creates an interactive and personalized experience, but moreover, it can quantify offline campaign like never before and offer insight data.

Specifications

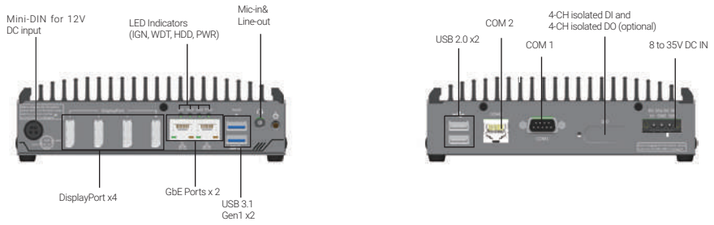
System Core	
Processor	AMD Ryzen™ Embedded V1605B CPU (4C/ 8T, 2M Cache, 2.0/ 3.6 GHz,12W - 25W TDP)
Graphics	Vega GPU with 8 compute units
Memory	Up to 64 GB DDR4-2400 SDRAM by two SODIMM sockets
Panel I/O Interface	
Video Port	4x DisplayPort, supporting 4K UHD resolution
Ethernet Port	2x Gigabit Ethernet ports by 2x Intel I210® controller
USB 3.1	2x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	2x USB 2.0
Audio	1x 3.5mm jack for mic-in and line-out
Serial Port	2x RS-232 (COM1 in DB9, COM2 in RJ50)
DIO	4-CH isolated DI and 4-CH isolated DO (optional)
Internal I/O Interface	
Mini PCI Express	2x half-size mini PCI Express socket for Google Edge TPU
M.2	1x M.2 3042/ 3052 B key (USB 3.1 Gen 1 + USB 2.0) for 4G/ 5G module with Micro SIM card slot 1x M.2 2230 E key (PCIe Gen3 x1 + USB 2.0) for WIFI module
Storage Interface	
M.2 SATA	1x M.2 2280 M key (SATA signal only) socket for SATA SSD installation

Power Supply	
DC Input	1x mini-DIN for 12V DC input or 1x 3-pin pluggable terminal block for 8 to 35V DC input (IGN/ GND/ V+)
Mechanical	
Dimension	173 mm (W) x 174 mm (D) x 50 mm (H)
Weight	1.6 kg
Mounting	Wall-mount (optional)
Environmental	
Operating Temperature	-25°C to 70°C
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.7, Category 4
Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

** For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

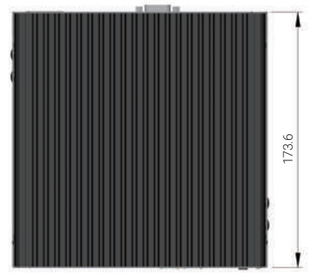
Last updated: 7 - Apr 2021

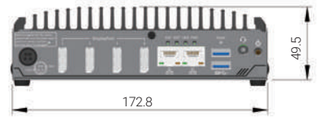
Appearance



Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-2700DS	AMD Ryzen™ Embedded V1000 rugged 4x 4K interactive digital signage system
Nuvo-2700DS-1TU	AMD Ryzen™ Embedded V1000 rugged 4x 4K interactive digital signage system with 1x Google Edge TPU
Nuvo-2700DS-2TU	AMD Ryzen™ Embedded V1000 rugged 4x 4K interactive digital signage system with 2x Google Edge TPU

Optional Accessories

Wmkit-V-Nuvo2700DS	Wall mounting assembly for Nuvo-2700DS series, vertical type
Cbl-IDC216F-DB15M-4.5CM	DIO Flat Cable to DB15 male cable, for Nuvo-2700DS, Length: 4.5CM
PA-60W-OW	60W AC/DC power adapter 12V/5A; cord end terminals for terminal block. operating temperature: -30 to 60 °C.
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70 °C.
PA-120W	120W AC/DC power adapter 12V/8.5A (max. output 120W); 18AWG/120cm; DIN 4PIN connector, operating Temperature: -30 to 70 °C.

POC-700 Series

Intel® Core™ i3-N305/ Atom® x7425E Ultra-compact Embedded Computer with 4x PoE+, USB 3.2, and MezIO® Interface

CE FC cULus LISTED I.T.E. E511805

Key Features

- **Intel® Alder Lake Core™ i3-N305 processor 15W with 8 E-Cores or Atom® x7425E**
- **Up to 16GB DDR5-4800 SODIMM**
- **-25 °C to 70 °C rugged wide temperature operation**
- **4x GbE ports PoE+ / 4x USB3.2 Gen 2 with screw-lock**
- **M.2 2280 M key SATA socket**
- **DP++ / HDMI™ 1.4b dual display outputs**
- **4-CH isolated DI + 4-CH isolated DO**
- **Front I/O access DIN-mounting design**
- **MezIO® compatible**

Introduction

POC-700 is Neousys' next-generation ultra-compact embedded controller, with a choice of the latest Intel® Alder Lake i3-N305 or x7425E processor that is capable of delivering up to 1.3x the CPU performance when compared to previous POC-500 series.

Neousys POC-700 is powered by Intel's Alder Lake i3-N305 featuring 8-core/ 8-thread processor with 32EUs UHD Graphics or Atom® x7425E featuring 4-core/ 4-thread with 24EUs UHD Graphics to support Intel OpenVINO™ for AI inference capabilities. The systems adopts DDR5-4800 to offer up to 1.8x the memory bandwidth over DDR4 to boost overall system performance. It also has four USB3.2 Gen2, and four GigE PoE+ ports with screw lock mechanisms to connect and secure industrial cameras for machine vision applications. Display output wise, there are HDMI™ and DP video outputs to support high-definition display devices. As for connections and expansions, POC-700 features isolated DIO for device monitoring/control, M.2 2280 M key for SATA SSD and a mini-PCIe socket for wireless WiFi, LTE/5G or CAN bus device.

Measuring just 64 x 116 x 176mm, the ultra-compact POC-700 can easily fit into confined spaces and is a seamless upgrade from POC-500 series with identical footprint. Benefiting from the performance gains of the latest Intel CPU, wide-temperature fanless design, and ample interfaces for industrial cameras and I/Os, POC-700 is perfect for machine vision and smart city applications.

Specifications

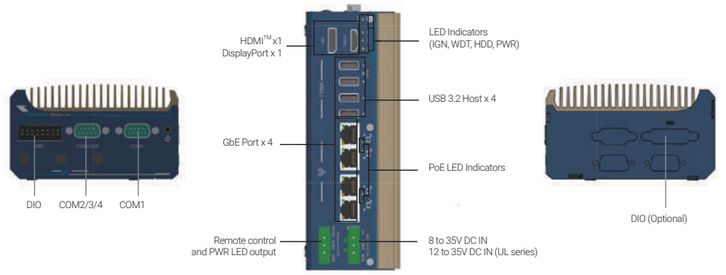
	POC-715	POC-712
System Core		
Processor	Intel® Alder Lake Core™ i3-N305 processor (8C/8T, 1.8/3.8 GHz, 15W TDP)	Intel® Alder Lake Atom® x7425E processor (4C/4T, 1.5 /3.4 GHz, 12W TDP)
Graphics	Integrated Intel® UHD Graphics with 32EUs	Integrated Intel® UHD Graphics with 24EUs
Memory	Up to 16 GB DDR5-4800 SDRAM (one SODIMM socket)	
TPM	Supports dTPM 2.0	
Panel I/O Interface		
Ethernet	4x Gb Ethernet ports by Intel® I350-AM4	
PoE+	IEEE 802.3at PoE+ on port #1 to 4	-
Native Video Port	1x DP++, Supporting 4096 x 2160 resolution 1x HDMI™ 1.4b, Supporting 3840 x 2160 30Hz	
Serial Port	1x Software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)	
USB	4x USB 3.2 Gen2 ports with screw-lock	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	
Storage Interface		
M.2	1x M.2 2280 M key socket (PCIe Gen3 x1) for NVMe SSD storage (supports SATA signal)	
Expansion Bus		
Mini-PCIe	1x full-size mini PCI Express socket with internal micro SIM socket	
Expandable I/O	1x MezIO® expansion interface for Neousys MezIO® modules	

	POC-715	POC-712
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input 1x 3-pin pluggable terminal block for 12 to 35V DC input (UL series)	
Remote Ctrl. &LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output	
Mechanical		
Dimension	64 (W) x 116 (D) x 176 (H) mm	
Weight	1.2 kg	
Mounting	DIN-rail mount (standard) or wall-mount (optional)	
Fan	Optional external-accessible 80mm x 80mm fan for system heat dissipation	
Environmental		
Operating Temperature	-25°C to 70°C*	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90% , non-condensing	
Vibration	MIL-STD-810H, Method 514.6, Category 4	
Shock	MIL-STD-810H, Method 516.6, Procedure I	
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035	
Safety	UL 62368-1, IEC 62368-1 (UL series only)	

** For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

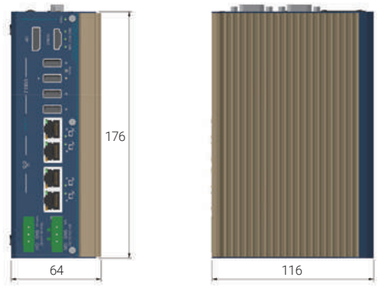
Last updated: 27 - Mar 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-715	Intel® Core™ i3-N305 Ultra-Compact Embedded Computer with 4x PoE+, 4x USB 3.2 and MezIO® Interface
POC-712	Intel® Atom® x7425E Ultra-Compact Embedded Computer with 4x GbE, 4x USB3.2 and MezIO® Interface
POC-715-UL	Intel® Core™ i3-N305 Ultra-Compact Embedded Computer with 4x PoE+, 4x USB 3.2 & UL certified
POC-712-UL	Intel® Atom® x7425E Ultra-Compact Embedded Computer with 4x GbE, 4x USB3.2 & UL certified

Optional Accessories

PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. Operating temperature : -30 to 70°C
PA-120W-OW	120W AC/DC power adapter with 20V, 6A DC output, cord end terminals for terminal block. Operating temperature : -30 to 70°C
Wmkit-V-POC500	Wall-mount assembly for POC-500 and POC-700 series, vertical type
Wmkit-H-POC500	Wall-mount assembly for POC-500 and POC-700 series, horizontal type
Cbl-DB9F-3DB9M-15CM	1x DB9 (Female) to 3x DB9 (Male), length: 15CM
AccsyBx-FAN-POC-700	Fan assembly for POC-700 series, 80x80x15 mm
MezIO® Modules	
MezIO®-C180-50	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
MezIO®-C181-50	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports
MezIO®-R11	MezIO® module with SATA port for 2.5" HDD/ SSD
MezIO®-R12	MezIO® module with SATA port for 2.5" HDD/ SSD, 4-CH isolated DI and 4-CH isolated DO
MezIO®-V20	MezIO® module with ignition power control function and 1x mini-PCIe socket for in-vehicle usage
MezIO®-U4-30	MezIO® module with 4x USB 3.1 ports

POC-700-FT Series

Intel® Alder Lake Ultra-Compact Embedded Controller with 4x PoE+, 4 USB 3.2, MezIO® Interface and flattop heatsink

Key Features

- **Intel® Alder Lake Core™ i3-N305 processor 15W with 8 E-Cores or Atom® x7425E**
- **Up to 16GB DDR5-4800 SODIMM**
- **Flattop heatsink design**
- **-25 °C to 60 °C rugged wide temperature fanless operation**
- **4x GbE ports PoE+ / 4x USB3.2 Gen 2 with screw-lock**
- **4-CH isolated DI + 4-CH isolated DO**
- **DP++ / HDMI™ 1.4b dual display outputs**
- **MezIO® compatible**

Introduction

The POC-700-FT is a variant of Neousys' acclaimed POC-700 series, featuring a unique flattop heatsink design that allows it to be applied to other categories of applications. The large thermal conduction area of the flattop heatsink helps effectively transfer heat to the outer surface and makes POC-700-FT particularly applicable for installation inside a sealed enclosure, where airflow is limited.

The POC-700-FT series is equipped with a Intel® Core™ i3-N305 8-core/ 8-thread processor, along with 32EUs UHD Graphics, or an Atom® x7425E 4-core/ 4-thread processor, with 24EUs UHD Graphics. Both options are optimized for AI inference tasks via Intel OpenVINO™. The system supports DDR5-4800 memory and includes an M.2 2280 M key NVMe slot for fast disk access. It also has four USB 3.2 Gen2 ports and four GigE PoE+ ports with screw-lock mechanisms, ensuring reliable connections for Ethernet/ USB cameras. POC-700-FT also offers COM ports and isolated DIO for monitoring and controlling devices, as well as a mini-PCIe slot that accommodates wireless modules such as WiFi, LTE/5G, or CAN bus devices.

The flattop heatsink not only facilitates in-cabinet thermal dissipation, but also reduces the overall size of the machine by 20% for confined spaces. It offers a great solution for customers who want fanless yet efficient thermal conduction when placing the machine in a cabinet. Combining multiple Ethernets and rich I/O functions, POC-700-FT fits for deployed in challenging environments, such as oil/ gas, mining, those requiring dust and water resistance.

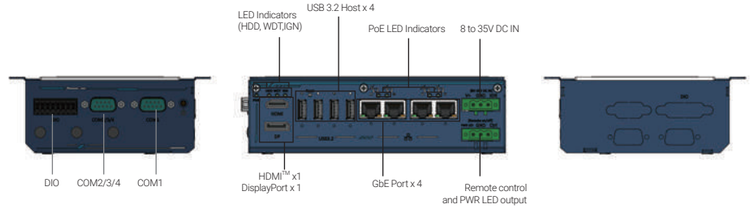
Specifications

	POC-715-FT	POC-712-FT
System Core		
Processor	Intel® Alder Lake Core™ i3-N305 processor (8C/8T, 1.8/3.8 GHz, 15W TDP)	Intel® Alder Lake Atom® x7425E processor (4C/4T, 1.5 /3.4 GHz, 12W TDP)
Graphics	Integrated Intel® UHD Graphics with 32EUs	Integrated Intel® UHD Graphics with 24EUs
Memory	Up to 16 GB DDR5-4800 SDRAM (one SODIMM socket)	
TPM	Supports dTPM 2.0	
Panel I/O Interface		
Ethernet	4x Gb Ethernet ports by Intel® I350-AM4	
PoE+	IEEE 802.3at PoE+ on port #1 to 4	-
Native Video Port	1x DP++, Supporting 4096 x 2160 resolution 1x HDMI™ 1.4b, Supporting 3840 x 2160 30Hz	
Serial Port	1x Software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)	
USB	4x USB 3.2 Gen2 ports with screw-lock	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	
Storage Interface		
M.2	1x M.2 2280 M key socket (PCIe Gen3 x1) for NVMe SSD storage (supports SATA signal)	
Expansion Bus		
Mini-PCIe	1x full-size mini PCI Express socket with internal micro SIM socket	
Expandable I/O	1x MezIO® expansion interface for Neousys MezIO® modules	

	POC-715-FT	POC-712-FT
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input	
Remote Ctrl. &LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output	
Mechanical		
Dimension	175.8mm (W) x 115.5mm (D) x 51.65mm (H)	
Weight	1.2 kg	
Mounting	Wall-mount (Standard)	
Environmental		
Operating Temperature	-25°C to 60°C [1][2]	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90% , non-condensing	
Vibration	MIL-STD-810H, Method 514.8, Category 4	
Shock	MIL-STD-810H, Method 516.8, Procedure I	
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035	

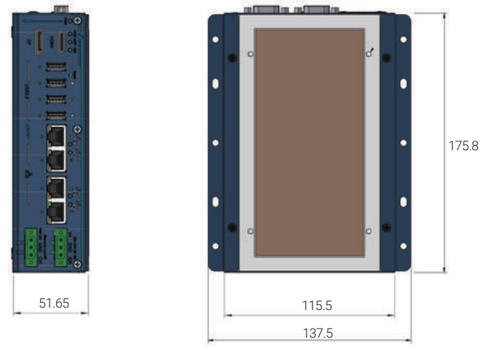
[1] For sub-zero operating temperature, a wide temperature storage is required.
[2] The system was tested while mounted on an aluminum panel measuring 60(W) x 60(D) x 0.3(H) cm in a high temperature environment to simulate in-cabinet conditions. For more information, please refer to the user manual.

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-715-FT	Intel® Core™ i3-N305 Ultra-Compact Embedded Computer with 4x PoE+, 4x USB 3.2, MezIO® Interface and flattop heatsink
POC-712-FT	Intel® Atom® x7425E Ultra-Compact Embedded Computer with 4x GbE, 4x USB3.2, MezIO® Interface and flattop heatsink

Optional Accessories

PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. Operating temperature : -30 to 70°C
PA-120W-OW	120W AC/DC power adapter with 20V, 6A DC output, cord end terminals for terminal block. Operating temperature : -30 to 70°C
PA-160W-OW	160W AC/DC power adapter 20V/ 8A; 18AWGx4C/ 120cm, cord end terminals for terminal block, operating temperature : -30°C to 70 °C
Cbl-DB9F-3DB9M-15CM	1x DB9 (Female) to 3x DB9 (Male), length: 15CM
MezIO® Modules	
MezIO®-C180-50	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
MezIO®-C181-50	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports
MezIO®-R11	MezIO® module with SATA port for 2.5" HDD/ SSD
MezIO®-R12	MezIO® module with SATA port for 2.5" HDD/ SSD, 4-CH isolated DI and 4-CH isolated DO
MezIO®-V20	MezIO® module with ignition power control function and 1x mini-PCIe socket for in-vehicle usage
MezIO®-U4-30	MezIO® module with 4x USB 3.1 ports

POC-500 Series

AMD Ryzen™ V1000 Ultra-compact Embedded Controller with 4x PoE+, 4x USB 3.1 and MezIO® Interface

POC-515 POC-545

Key Features

- **AMD Ryzen™ embedded V1000 series quad-core 15W/ 45W CPU**
- **-25 °C to 70 °C rugged wide temperature operation**
- **Four Gigabit PoE+ ports with screw-lock**
- **Four USB 3.1 ports with screw-lock**
- **M.2 2280 M key NVMe (Gen3 x2) socket for fast storage access**
- **DP + VGA dual display outputs**
- **Front I/O access and DIN-rail mount design**
- **MezIO® compatible**

Introduction

POC-500 series is the next generation ultra-compact embedded controller offering performances never-seen-before in this form factor. Featuring AMD Ryzen™ Embedded V1000 4-core/ 8-thread processor, it delivers up to 3x times the CPU performance over previous POC series. GPU performance wise, it delivers an unheard of 3.6 TFLOPS in FP16 for an ultra-compact form factor embedded controller. Another amazing feat is that it manages to incorporate an M.2 2280 NVMe SSD (PCIe Gen3 x2) to support 2x times the disk read/ write speed over typical 2.5" SATA SSDs.

POC-500 series continues the POC series ingenious DIN-rail mount mechanical design and offers plenty of front-accessible I/Os. Measuring just 64 x 176 x 116 mm (2.5" x 6.9" x 4.6"), it has 4x PoE+ ports, 4x USB 3.1 ports and 4x COM ports. And best of all, all data ports come with screw-lock mechanism so you can be rest assured that cables are always secured. POC-500 series is available in two CPU variants, the V1807B (45W) variant is for high computing power demand and the V1605B (15W) variant is designed for rugged fanless operation.

The arrival of POC-500 series signifies a new breed of ultra-compact embedded controller; one with better I/O design, extraordinary ruggedness and significantly more CPU/ GPU oomph for versatile applications.

Specifications

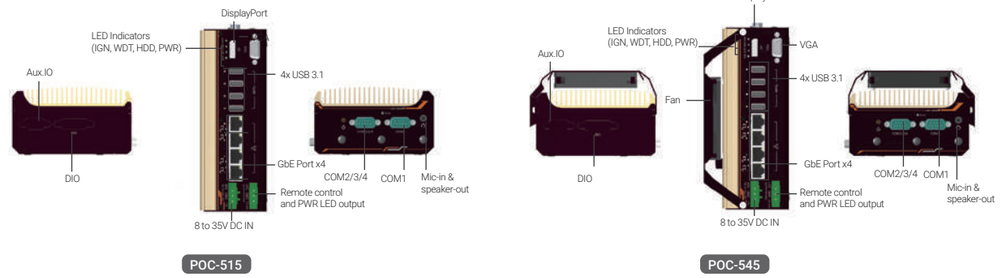

	POC-515	POC-545
System Core		
Processor	AMD Ryzen™ V1605B CPU (4C/ 8T, 2M Cache, 2.0/ 3.6 GHz, 12W - 25W TDP)	AMD Ryzen™ V1807B CPU (4C/ 8T, 2M Cache, 3.35/ 3.8 GHz, 35W - 54W TDP)
Graphics	Vega GPU with 8 compute units	Vega GPU with 11 compute units
Memory	Up to 32 GB DDR4-2400 SDRAM by one SODIMM socket	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports TPM 2.0	
Panel I/O Interface		
Ethernet	4x Gb Ethernet ports by Intel® I350-AM4	
PoE+	IEEE 802.3at PoE+ on port #1 to 4 100 W total power budget	
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports with screw-lock	
Video Port	1x VGA , supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2160 resolution	
Serial Port	1x software-programmable RS-232/ 422/ 485 ports (COM1) 3x 3-wire RS-232 ports (COM2/ 3/ 4) or 1x RS-422/ 485 port (COM2)	
Audio	1x 3.5mm jack for mic-in and speaker-out	
Internal I/O Interface		
Mini-PCIe	1x full-size mini PCI Express socket with internal SIM socket	
Expandable I/O	1x MezIO® expansion interface for Neousys MezIO® modules	
Storage Interface		
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen3 x2) for NVMe SSD installation	


	POC-515	POC-545
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input	
Remote Ctrl.&LED Output	1x3-pin pluggable terminal block for remote control and PWR LED output	
Mechanical		
Dimension	64 (W) x 116 (D) x 176 (H) mm	82 (W) x 118 (D) x 176 (H) mm
Weight	1.2 kg	1.4 kg
Mounting	DIN-rail mount (standard) or Wall-mount (optional)	
Fan	-	External-accessible 80mm x 80mm fan for system heat dissipation
Environmental		
Operating Temperature	-25°C to 70°C*/**	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90% , non-condensing	
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4	
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	
Safety	EN62368-1	
EMC	CE/ FCC Class A, according to EN 55032 & EN 55024	

** For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*
*** For POC-545, operating temperature is up to 70°C only if external-accessible fan is installed.*

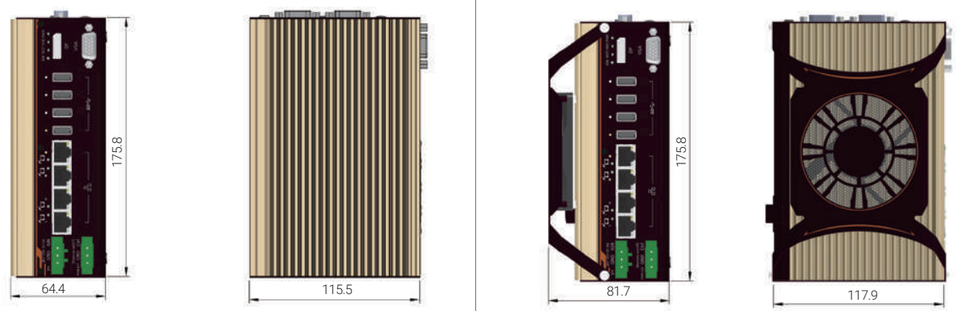
Last updated: 17 - Mar 2023

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-515	AMD Ryzen™ V1605B ultra-compact embedded controller with 4x PoE+ ports, 4x USB 3.1 ports and MezIO® interface
POC-516	AMD Ryzen™ V1605B ultra-compact embedded controller with 4x PoE+ ports, 4x USB 3.1 ports and MezIO®-R12
POC-545	AMD Ryzen™ V1807B ultra-compact embedded controller with 4x PoE+ ports, 4x USB 3.1 ports and MezIO® interface
POC-546	AMD Ryzen™ V1807B ultra-compact embedded controller with 4x PoE+ ports, 4x USB 3.1 ports and MezIO®-R12

Optional Accessories

PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C.
PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. operating temperature : -30 to 60 °C.
Cbl-DB9F-3DB9M-15CM	1x DB9 (Female) to 3x DB9 (Male), length: 15CM
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	MezIO® module with ignition power control function and 1x mini-PCIe socket for in-vehicle usage
MezIO®-U4	MezIO® module with 4x USB 3.1 ports
MezIO®-G4	MezIO® module with 4x GigE ports
MezIO®-R11	MezIO® module with SATA port for 2.5" HDD/ SSD
MezIO®-R12	MezIO® module with SATA port for 2.5" HDD/ SSD, 4-CH isolated DI and 4-CH isolated DO

POC-400 Series

Intel® Elkhart Lake Atom® x6425E Ultra-compact Fanless Embedded Computer with 2.5GbE & PoE+

Key Features

- **Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/ 3.0GHz 12W processor**
- **Rugged -25 °C to 70 °C fanless operation**
- **2x 2.5GbE PoE+ ports and 1x 2.5GbE port with screw-lock**
- **2x USB 3.1 Gen1 and 2x USB 2.0 ports with screw-lock**
- **M.2 2280 M key SATA interface**
- **Dual DP display outputs supporting 4096 x 2160 resolution**
- **Front I/O access DIN-mounting design**
- **MezIO® compatible**

Introduction

POC-400 is an ultra-compact fanless embedded computer for industrial applications. It utilizes the latest Intel® Elkhart Lake platform Atom® x6425E 4-core CPU that can deliver 1.8x CPU and 2x GPU performance improvement, compared to the previous generation.

In addition to the performance boost, POC-400 features an ultra-compact design measuring just 56 x 108 x 153 mm, which can easily fit into restricted spaces. The system comes with a DIN-rail mounting chassis and an abundance of front-access I/O interfaces. Featuring three 2.5GBASE-T Ethernet ports with IEEE 802.3 PoE+ capability, they provide higher data bandwidth for devices such as NBASE-T cameras and is backward-compatible with 1000/100/10 Mbps Ethernet. It also has two 4K DisplayPort, 2x USB3.1 Gen1, 2x USB 2.0 and COM ports for general industrial applications.

Supporting Neousys' proprietary MezIO® interface for function expansion, you can add functions such as isolated DIO, RS-232/422/485, ignition control and 4G/ 5G by installing a MezIO® module. Moreover, POC-400 comes with an internal M.2 E key socket for a Google TPU or an Intel® Movidius VPU module to transform it into a lightweight AI inference platform at the edge.

Combining the new 10nm Atom® CPU, 2.5G Ethernet ports, PoE+ and ultra-compact enclosure with function expansion capabilities, Neousys' POC-400 is a compact and yet versatile embedded computer that can fuel various industrial applications.

Specifications

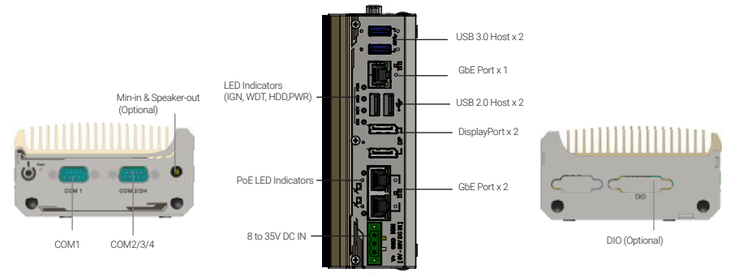
System Core	
Processor	Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/3.0GHz 12W processor
Graphics	Integrated Intel® UHD Graphics
Memory	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports fTPM 2.0
Panel I/O Interface	
Ethernet	3x 2.5GBASE-T Ethernet ports by Intel® I225 GbE controllers
PoE	Optional IEEE 802.3at PoE+ on port #2 and #3, 50 W total power budget
Video Port	2x DisplayPort connector, supporting 4096 x 2160 resolution @ 60Hz
USB 3.1	2x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	2x USB 2.0 ports
Serial Port	1x software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Internal Expansion Bus	
M.2 E key	1x M.2 2230 E key socket for WiFi, Google TPU or Movidius VPU module
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules

Storage Interface	
M.2 M key	1x M.2 2280 SATA interface
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input
Mechanical	
Dimension	56 mm (W) x 108 mm (D) x 153 mm (H)
Weight	0.96 kg
Mounting	DIN-rail mount (standard) or Wall-mount (optional)
Environmental	
Operating Temperature	-25°C to 70°C*/**
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.7, Category 4
Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

** The 100% CPU/GPU loading for high temperature test is applied using Passmark® BurnInTest™ v8.0. For detail testing criteria, please contact Neousys Technology*
*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

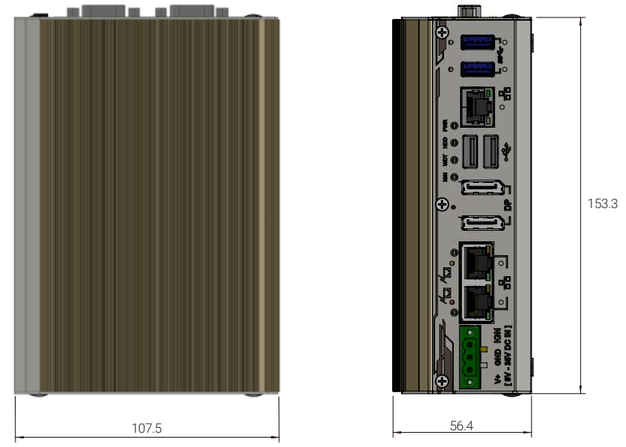
Last updated: 29 - Mar 2023

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-400	Intel® Elkhart Lake Atom® x6425E ultra-compact DIN-rail fanless rugged computer with 1x 2.5GbE, 2x 2.5G PoE+ and 2x USB 3.1 Gen1
POC-410	Intel® Elkhart Lake Atom® x6425E ultra-compact DIN-rail fanless rugged computer with 3x 2.5GbE and 2x USB 3.1 Gen1
Optional 1x 3.5 mm jack for mic-in and speaker-out	

Optional Accessories

PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. Operating temperature : -30 to 60 °C
Wmkit-V-POC400	Wall-mount assembly for POC-400 series, vertical type
Wmkit-H-POC400	Wall-mount assembly for POC-400 series, horizontal type
Cbl-DB9F-3DB9M-15CM	1x DB9 (Female) to 3x DB9 (Male), length: 15CM
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	MezIO® module with ignition power control function and 1x mini-PCIe socket for in-vehicle usage
MezIO®-U4	MezIO® module with 4x USB 3.1 ports
MezIO®-R11	MezIO® module with SATA port for 2.5" HDD/ SSD
MezIO®-R12	MezIO® module with SATA port for 2.5" HDD/ SSD, 4-CH isolated DI and 4-CH isolated DO

POC-465AWP

IP66 Waterproof Computer with Intel® Atom® x6425E, 2x 2.5GbE and Isolated COM Ports

Key Features

- **IP66-rated waterproof and dustproof design**
- **Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/ 3.0GHz 12W processor**
- **2x 2.5GbE Ethernet ports via M12 X-coded connectors**
- **1x isolated RS-232 and 1x isolated RS-422/485 via M12 A-coded connectors**
- **2x USB 2.0 ports via M12 A-coded connectors**
- **1x VGA port via M12 A-coded connector**
- **8-35V DC input with ignition power control input via M12 A-coded connector**

Introduction

POC-465AWP is a new segment of Neousys fanless computers featuring an IP66 rating based on Intel® Elkhart Lake Atom. The acronym AWP stands for affordability, waterproof, and protection. In short, the POC-465AWP is designed to solve your everyday environmental challenges. With IP66 waterproof protection in a stainless steel and aluminum chassis, the air-tight system prevents internal PCBA corrosion in high salinity or humidity situations. Secondly, the hermetic enclosure can be deployed into grimy or dusty air-polluted environments such as a farm or mining site without being affected. The system also features -25°C to 70°C wide operating temperature capability and an efficient heat dissipation design to minimize thermal throttling.

Connection-wise, POC-465AWP comes with M12 connectors to ensure connection in demanding, shock, and vibration environments. The system has two 2.5G Ethernet ports, one isolated RS-232, and one isolated RS-422/485. The isolated design protects the motherboard from voltage spikes that may damage internal components. It also has a VGA, two USB2.0, an M.2 M key to support SATA SSD, and a mini-PCIe for wireless WiFi/ LTE, CAN bus, etc.

Combining IP66, M12 and great thermal design, POC-465AWP is reliable and highly tolerant to challenging conditions to fulfill versatile applications. Its ultra-compact size fits easily into confined spaces, and its waterproof capability makes it suitable for outdoor applications like wildfire detection, unmanned vehicle; or harsh environments like food / beverage manufacturing and pharmaceutical processing. The IP66 rating is an additional function that can enhance a product's value and quality, and such is the case with Neousys' POC-465AWP.

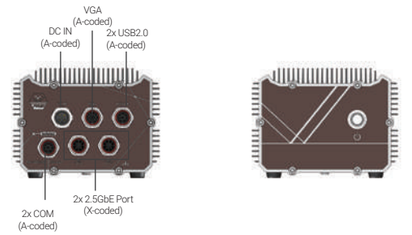
Specifications

System Core	
Processor	Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/ 3.0GHz 12W processor
Graphics	Integrated Intel® UHD Graphics
Memory	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports TPM 2.0 (fTPM/ dTPM)
I/O Interface	
Ethernet	2x 2.5G Ethernet ports by Intel® I226-IT via M12 X-coded, 8-pin connector
Native Video Port	1x VGA connector, supporting 1920 x 1200 resolution, via M12 A-coded, 17-pin connector
Serial Port	1x isolated RS-232 port (COM1) and 1x isolated RS-422/485 ports (COM2) via M12 A-coded, 8-pin connector
USB	2x USB 2.0 ports via M12 A-coded, 8-pin connector
Storage Interface	
M.2	1x M.2 2280 M key socket for SATA SSD
Internal Expansion Bus	
Mini-PCIe	1x full-size mini PCI Express socket with internal micro SIM socket

Power Supply	
DC Input	8 to 35V DC input with ignition power control input via M12 A-coded, 5-pin connector
Mechanical	
Dimension	106 mm (W) x 159.7 mm (D) x 79 mm (H)
Weight	1.45kg
Mounting	Wall-mount (optional)
Environmental	
Operating Temperature	-25°C to 70°C
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

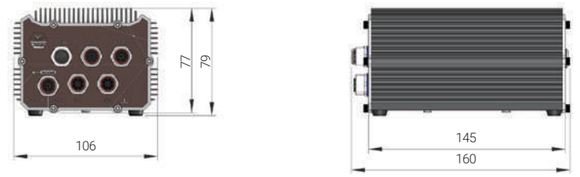
Last updated: 14 - Jul 2023

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-465AWP	IP66 Waterproof Computer with Intel® Atom® x6425E, 2x 2.5GbE and Isolated COM Ports

Optional Accessories

PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. Operating temperature : -30 to 60 °C
Cblkit-M12-POC-465AWP	2x LAN, 1x VGA, 2x USB2.0 (by Y-cable), 2x COM (by Y-cable) and DC power cables
WMkit-POC465AWP	Wall-mount assembly for POC-465AWP

POC-40 Series

Intel® Elkhart Lake Atom® x6211E/ x6413E Extreme-compact Embedded Computer with 2x GbE and 2x USB 3.1

Key Features

- **Intel® Elkhart Lake Atom® x6211E/ x6413E processor**
- **52 x 89 x 112 mm extremely compact form factor**
- **Rugged -25°C to 70°C fanless wide-temperature operation**
- **Two GigE ports, two USB 3.1 Gen1 ports and two USB2.0 ports**
- **M.2 2280 M key SATA storage interface**
- **One M.2 B key socket supporting 5G/ 4G 3042/ 3052 modules**
- **One M.2 E key socket for WiFi 5/ WiFi 6 modules**
- **One COM port with RS-232/ 422/ 485 modes and three RS-232 COM ports**

Introduction

POC-40 Series is an extremely compact fanless computer with dimensions measuring just 52 x 89 x 112 mm. It features Elkhart Lake Atom® processor and is designed for space-restricted applications such as factory data collection, rugged edge computing and mobile gateway.

Utilizing Intel's 10nm process technology, the new Elkhart Lake Atom® x6211E and x6413E processor can deliver up to 1.8 times the performance boost over its previous generation. In comparison to POC-200, POC-40 provides 1.9 times computing performance at only half the size. It features generic I/O functions, such as two Gigabit Ethernet ports, four USB 3.1 Gen1/ 2.0 ports, four COM ports and optional isolated digital I/Os for industrial communication and control. In addition, by adopting dedicated M.2 B key and E key slots, the POC-40 can fully harness the bandwidth of 5G and WiFi 6 wireless communications to provide wide-area coverage and real-time data transmission for industrial and mobile gateway applications.

With a similar footprint as a PICO-ITX motherboard, Neousys' POC-40 is perfect for projects that require above par performance in an extremely compact package. Ideal for both edge computing and gateway applications, it is a low power consumption and lightweight fanless computer that offers wide-temperature operation for harsh environments.

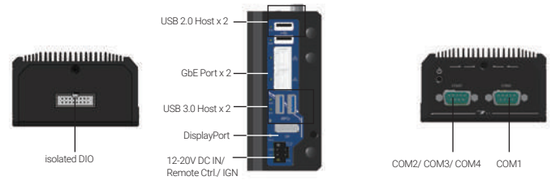
Specifications

	POC-40+	POC-40
System Core		
Processor	Intel® Atom® x6413E quad-core 1.5GHz/ 3.0GHz 9W processor	Intel® Atom® x6211E dual-core 1.3GHz/ 3.0GHz 6W proc essor
Graphics	Integrated Intel® UHD Graphics	
Memory	Up to 32 GB DDR4-3200 SDRAM (one SODIMM slot)	
TPM	Supports fTPM 2.0	
Panel I/O Interface		
Ethernet	2x Gigabit Ethernet ports by Intel® I210 GbE controllers	
USB 3.1	2x USB 3.1 Gen1 (5 Gbps) ports	
USB 2.0	2x USB 2.0 ports	
Video Port	1x DisplayPort connector, supporting 4096 x 2160 resolution @ 60Hz	
Serial Port	1x software-programmable RS-232/ 422/ 485 port (COM1) 1x isolated RS-422/485 port (COM2)	1x software-programmable RS-232/ 422/ 485 port (COM1) 3x 3-wire RS-232 ports (COM2/ COM3/COM4)
Isolated Digital I/O	4-ch isolated digital input and 4-ch isolated digital output	Optional 4-ch isolated digital input and 4-ch isolated digital output
Storage Interface		
M.2	1x M.2 2280 M key SATA interface	

	POC-40+	POC-40
Internal Expansion Bus		
M.2 B key	N/A	1x M.2 3042/ 3052 B key socket with internal SIM socket for 4G/ 5G module
M.2 E key	1x M.2 2230 E key socket for WiFi 5/ WiFi 6 module	
Mini-PCIe	1x full-size mini PCI Express socket with internal SIM socket	N/A
Power Supply		
DC Input	1x 4-pin pluggable terminal block for 12-20V DC input with optional ignition power control	
Remote Control	1x 4-pin pluggable terminal block for remote control	
Mechanical		
Dimension	52 mm (W) x 89 mm (D) x 112 mm (H)	
Weight	0.6 kg	
Mounting	DIN-rail mount (standard) or Wall-mount (optional)	
Environmental		
Operating Temperature	-25°C to 60°C	-25°C to 70°C
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90% , non-condensing	
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4	
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	
EMC	CE/FCC Class A, according to EN 55032 & EN 55035	

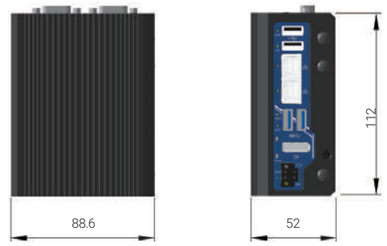
Last updated: 06 - Oct 2023

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-40	Intel® Elkhart Lake Atom® x6211E Extreme-compact Embedded Computer with 2x GbE and 2x USB 3.1
POC-40-DIO	Intel® Elkhart Lake Atom® x6211E Extreme-compact Embedded Controller with 2x GbE and 2x USB 3.1 and 8x isolated DIO
POC-40-IGN	Intel® Elkhart Lake Atom® x6211E Extreme-compact Embedded Controller with 2x GbE, 2x USB 3.1 and ignition power control
POC-40+	Intel® Elkhart Lake x6413E Extreme-compact IOT Gateway Computer with 2x GbE, 2x USB 3.1, 1x isolated RS422/485 and 8x isolated DIO
POC-40+IGN	Intel® Elkhart Lake x6413E Extreme-compact IOT Gateway Computer with 2x GbE, 2x USB 3.1, 1x isolated RS422/485 and ignition power control

Optional Accessories

PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. Operating temperature : -30 to 60 °C
Wmkit-V-POC300	Wall mounting assembly for POC-300, POC-400, POC-40 series, vertical type
Cbl-DB9F-3DB9M-15CM	1x DB9 (Female) to 3x DB9 (Male), length: 15CM

POC-300 Series

Intel® Apollo Lake Pentium® N4200 and Atom® E3950 Ultra-Compact DIN-rail Controller with GbE, PoE and USB 3.1

Key Features

- **Intel® Apollo Lake Pentium® N4200 and Atom® E3950 quad-core processor**
- **Fanless, rugged and wide temperature operation (-25 °C to 70 °C)**
- **One GbE port and two Gigabit PoE+ ports**
- **Two USB 3.1 and two USB 2.0 ports**
- **DVI + VGA dual display outputs**
- **Front-accessible I/O**
- **DIN-rail mount design**
- **MezIO® interface compatible**

Introduction

POC-300 series features Pentium® N4200 and Atom® x7-E3950 quad-core processors, which offers up to 1.5 times of CPU performance and 3 times the GPU performance improvement compared to previous generation Atom® E3845 CPU.

POC-300 series have an ingenious mechanical design that combines DIN-rail mount chassis with front-accessible I/O in an ultra-compact enclosure. They have rich computer-like I/Os such as GbE, USB 3.1/ 2,0, COM ports and mSATA storage, in a compact footprint that measures just 5.6 x 15 x 11 cm. IEEE 802.3at PoE+ function is also available on 2 of the 3 GbE ports to power cameras for machine vision or surveillance applications. POC-300 series features Neousys' MezIO® interface for easy function expansion via versatile MezIO® modules.

With Neousys' proven fanless design heritage, the POC-300 series thrive in harsh environments. Featuring rich I/Os, advanced CPU and compact size, POC-300 series are compelling fanless controllers beneficial for various industrial applications.

Specifications

	POC-300	POC-310	POC-320	POC-330
System Core				
Processor	Intel® Atom® E3950 1.6/ 2.0 GHz quad-core processor		Intel® Pentium® N4200 1.1/ 2.5 GHz quad-core processor	
Graphics	Integrated Intel® HD Graphics 505			
Memory	Up to 8GB DDR3L-1866 (single SODIMM slot)			
Panel I/O Interface				
Ethernet	3x Gigabit Ethernet ports by Intel® I210 GbE controller			
PoE	IEEE 802.3at PoE+ on port #2 and #3, 50 W total power budget	-	IEEE 802.3at PoE+ on port #2 and #3, 50 W total power budget	-
Video Port	VGA and DVI dual display outputs via DVI-I			
USB 3.1	2x USB 3.1 Gen1 (5 Gbps) ports			
USB 2.0	2x USB 2.0 ports			
Serial Port	1x Software-programmable RS-232/ 422/ 485 ports (COM1) 3x 3-wire RS-232 ports (COM2/ 3/ 4) or 1x RS-422/ 485 port (COM2)			
Audio	1x mic-in and 1x speaker-out			
Internal I/O Interface				
Mini-PCIe	1x full-size mini PCI Express slot with USIM socket			
Expandable I/O	1x MezIO® expansion interface for Neousys MezIO® modules			
Storage Interface				
mSATA	1x half-size mSATA port			
Power Supply				
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input			
Mechanical				
Dimension	56 mm (W) x 108 mm (D) x 153 mm (H)			
Weight	0.96 kg			
Mounting	DIN-rail mount (standard) or Wall-mount (optional)			

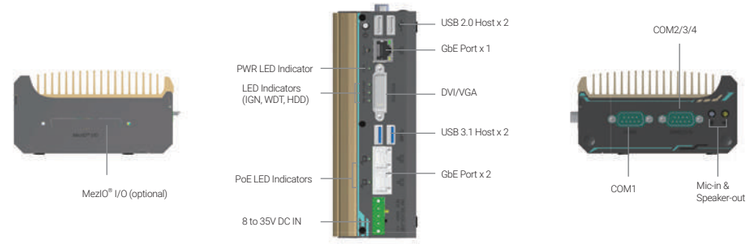
	POC-300	POC-310	POC-320	POC-330
Environmental				
Operating Temperature	-25°C to 70°C with SSD, 100% CPU loading */** -10°C to 50°C with HDD, 100% CPU loading */**			
Storage Temperature	-40°C to 85°C**			
Humidity	10% to 90% , non-condensing			
Vibration	Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, 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 & EN 55032			

** The 100% CPU/GPU loading for high temperature test is applied using Passmark® BurnInTest™ v8.0. For detail testing criteria, please contact Neousys Technology*
*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

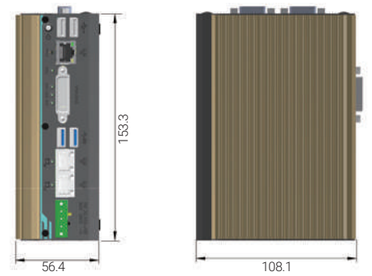
▲ POC-300 with MezIO® - R11 and 2.5" HDD

Last updated: 17 - Mar 2023

Appearance



Dimensions



Unit : mm

Ordering Information

Model No.	Product Description
POC-300	Intel® Apollo Lake Atom® E3950 ultra-compact DIN-rail controller with 1xGbE, 2x PoE+ and 2x USB 3.1
POC-310	Intel® Apollo Lake Atom® E3950 ultra-compact DIN-rail Controller with 3xGbE and 2x USB 3.1
POC-320	Intel® Apollo Lake Pentium® N4200 ultra-compact DIN-rail controller with 1xGbE, 2x PoE+ and 2x USB 3.1
POC-330	Intel® Apollo Lake Pentium® N4200 ultra-compact DIN-rail controller with 3xGbE and 2x USB 3.1

Ordering Model Matrix

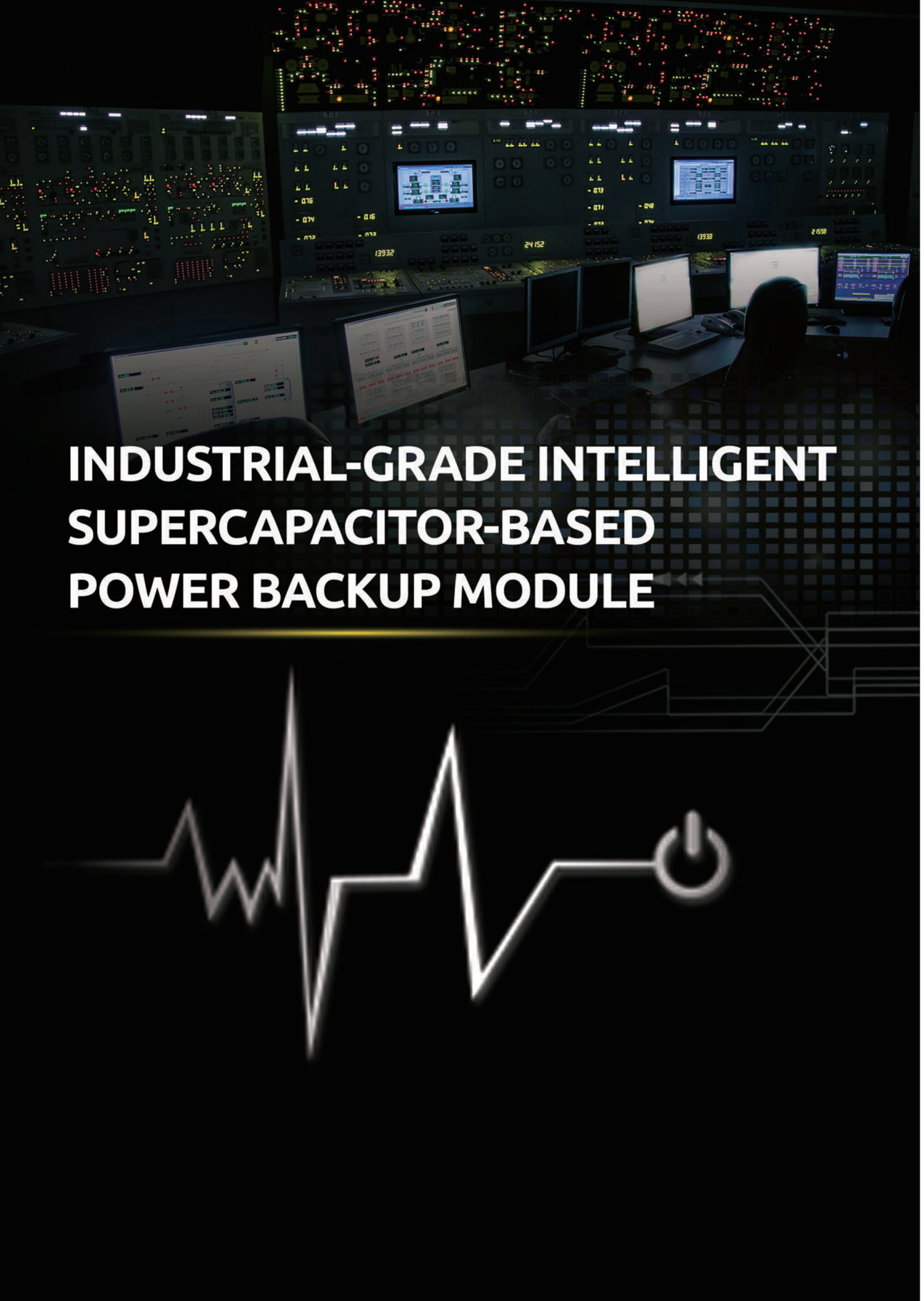
Controller \ Pre-installed MezIO	MezIO-R11	MezIO-R12
POC-300	POC-301	POC-302
POC-310	POC-311	POC-312
POC-320	POC-321	POC-322
POC-330	POC-331	POC-332

Optional Accessories

PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. Operating temperature : -30 to 60 °C
Wmkit-V-POC300	Wall-mount assembly for POC-300 series, vertical type
Wmkit-H-POC300	Wall-mount assembly for POC-300 series, horizontal type
Cbl-DB9F-3DB9M-15CM	1x DB9 (Female) to 3x DB9 (Male), length: 15CM

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	MezIO® module with ignition power control function and 1x mini-PCIe socket for in-vehicle usage
MezIO®-U4	MezIO® module with 4x USB 3.1 ports
MezIO®-R11	MezIO® module with SATA port for 2.5" HDD/ SSD
MezIO®-R12	MezIO® module with SATA port for 2.5" HDD/ SSD, 4-CH isolated DI and 4-CH isolated DO

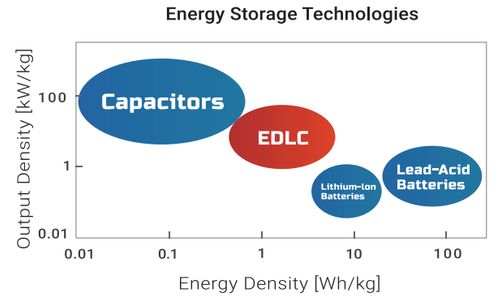


Supercapacitor-based Power Backup Solution

Battery vs. Supercapacitor

For decades, battery has been the preferred form of energy storage as it has high energy density (10 to 100 Wh/kg). However, limited by operating temperature (typically 0°C to 40°C) and cycle life (2 years or 500 charge-discharge cycles), battery is neither rugged nor durable enough for industrial applications.

Supercapacitor, also called electric double-layer capacitor (EDLC), is an emerging category of capacitor offering 10 to 100 times more energy density than electrolytic capacitor (1 to 10 Wh/kg). In addition to its impressive energy density, supercapacitor also has a wide operating temperature range (-40°C to 85°C) and long operating life (10 years or 500,000 charge-discharge cycles). These two traits help make it a reliable industrial power backup solution.

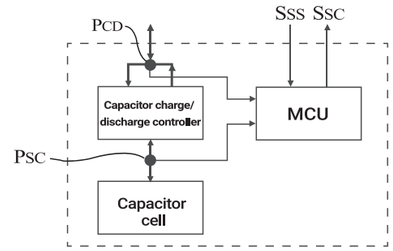


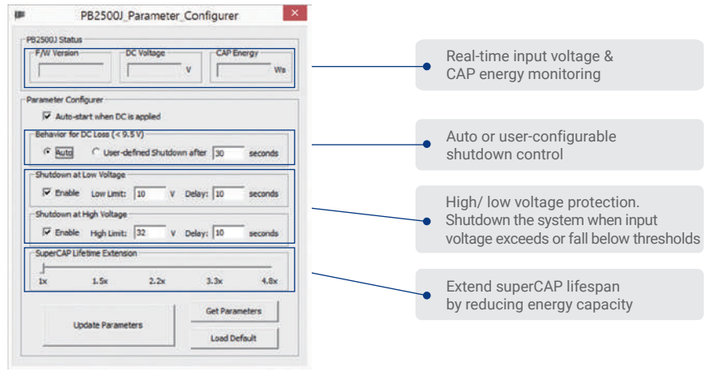
Neousys' Patented CAP Energy Management Technology

To design and create a reliable supercapacitor-based power backup system requires fundamental techniques such as charge/ discharge control, active load balance and DC/ DC regulation. But the real challenge is how to get the most out of the capacitor energy while ensuring the system shuts down safely during the blackout.

At Neousys Technology, we have patented an architecture (R.O.C. Patent No. I598820) that incorporates a microprocessor along with supercapacitor and charge/ discharge controller. The proprietary firmware embedded in the MCU not only monitors energy level continuously, it also automatically initiates soft-shutdown to prevent data loss/ corruption.

The patented architecture provides sophisticated features such as real-time energy monitoring, high/low voltage protection and auto/ manual shutdown control. Users can also extend the lifespan of ultracapacitors up to 4.8x via the parameter configuration utility.





Supercapacitor-based Power Backup Solution vs. UPS

Combining supercapacitors and our patented architecture, Neousys introduces a revolutionary supercapacitor-based power backup solution for industrial applications. Compared to battery-based UPS, it has wider operating temperature, extended operating life, adequate backup time to secure your embedded controller against unforeseen power outages.

	PB-2500J	PB-9250J	Off-line UPS	Interactive UPS	On-line UPS
Energy storage technology	Supercapacitor	Supercapacitor	Battery	Battery	Battery
Backup time	1 to 3 mins	1 to 10 mins	> 30 mins	> 30 mins	> 30 mins
Operating temperature	**-25°C to 65°C**	**-25°C to 65°C**	0°C to 40°C	0°C to 40°C	0°C to 40°C
Lifespan	**> 10 yrs**	**> 10 yrs**	2 yrs @ 25°C	2 yrs @ 25°C	2 yrs @ 25°C
Regulated power output	Yes	Yes	No	No	Yes
Shutdown control	Automatic, plug and play	Automatic, plug and play	Via RS-232 and software	Via RS-232 and software	Via RS-232 and software

PB-9250J-110V

9250 w·s Standalone Supercapacitor-based UPS Module with 110V DC Input for Railway Application

CE FC

Key Features

- **Universal standalone power backup module compatible with all box-PCs**
- **Supports 43-160V wide-range DC input for railway application**
- **Supercapacitor-based, -40 to 70°C operation for EN 50155 OT4 class conformity**
- **9250 watt-second energy capacity**
- **Maximum 120W output power for the connected back-end system**
- **Over 10 years lifespan, or 500,000 charge/ discharge cycles**
- **Patented CAP energy management technology***
  - **Extending back-up time in the event of an unforeseen power outage**
  - **Monitoring energy and power consumption to extend operation time for safe system shutdown**
- **EN 50155 and EN 45545 certificate**

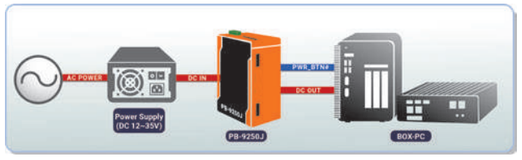
**R.O.C Patent No. I598820*

Introduction

Neousys' PB-9250J-110V is a newly designed SuperCAP UPS accepting 110V DC input for fast-growing railway applications. Composed with eight 370F supercapacitor, PB-9250J-110V provides 9250 watt-second stored energy to sustain back-end system from seconds to minutes during power loss. Different from traditional battery-based UPS systems, supercapacitor has a wide operating temperature range and long operating life up to 10 years. Neousys' PB-9250J-110V features -25 to 65°C operating temperature range and extremely high durability.

Thanks to Neousys' patented CAP energy management technology, PB-9250J-110V provides sophisticated features such as real-time energy/ power consumption monitoring, high/low voltage protection, and auto/ manual shutdown control. It automatically manages boot and shutdown to help your system thrive on trains with unstable power source. Additional digital output channels are incorporated for indicating system status such as charging/ discharging and power button control.

While computer systems are widely deployed in various railway applications, the rolling stock's electrical stability still remains a focal point and is crucial for system reliability. PB-9250J-110V can protect the computer or other equipment against power interruption when a train passes through a level crossing or a railroad switch. Furthermore, with its EN 50155 and EN 45545 certificate, PB-9250J-110V can be easily installed and implemented with existing computer/equipment or integrated with onboard power distribution system.



Specifications

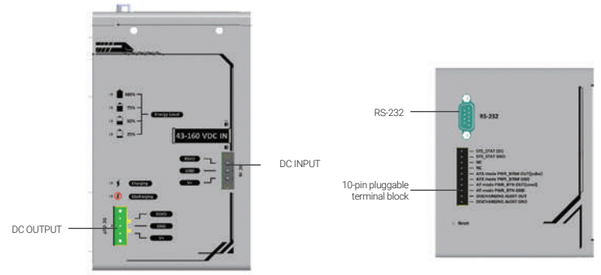
Supercapacitor Configuration	
Composition	8x 370F, 3.0V supercapacitors
Capacity	9250 watt-second
Expected lifespan	>10 years*
Lifecycle	500,000 charging/ discharging cycles*
Power Specification	
Input Voltage	43-160 VDC
Input Connector	1x 3-pin pluggable terminal block (V+, GND)
Output Voltage	24 VDC
Output Power	Maximum 120W output
Output Connector	1x 3-pin pluggable terminal block (V+, GND)
I/O Interface	
COM Port	1x DB9 for 3-wire isolated RS-232
Isolated DIO	1x 10-pin pluggable terminal block for - ATX mode PWR_BTN# output (open-drain, pulse type) - AT mode PWR_BTN output (open-drain, level type) - DISCHARGING ALERT output (open-drain, level type) - SYS_STAT input

Mechanical	
Dimension	110(W) x 175.2mm(H) x 128.2mm(D)
Weight	2.33 kg
Mounting	DIN-rail mounting or optional wall-mounting
Environmental	
Operating Temperature	-40°C to 70°C EN50155 OT4 class
Storage Temperature	-40°C to 85°C
Vibration	Compliant with IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Shock	Compliant with IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
EMC	EN 50155:2017, Clause 13.4.8 CE/FCC Class A, according to EN 55032 & EN 55035
EN50155	All mandatory sections of EN 50155:2017
EN45545	EN 45545-2 (Fire protection on railway vehicles)

** To achieve > 10 years lifespan under 24/7 at 70°C operation, please charge PB-9250J-SA to 6525J energy level using the 4.8x SuperCAP Lifetime Extension setting (please refer to the user manual for details). Once the rated lifetime or cycle life has been reached, the capacity of supercapacitor may decrease up to 30% and ESR may increase up to 100% from initial values.*
*** Backup time for uninterruptible operation may be reduced when sustaining a back-end system with high power consumption. Please consult with Neousys Technology if your computer accepts only constant-voltage input.*
**** To ensure PB-9250J's power backup operation functions as intended, please contact Neousys Technology technical support if your connecting back-end system accepts only constant voltage input.*

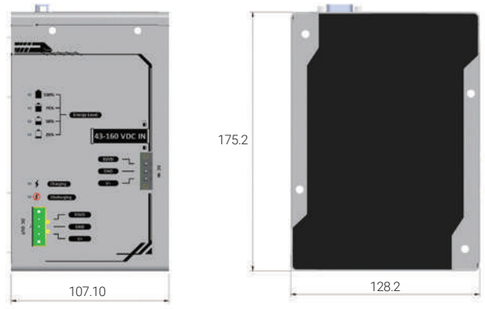
Last updated: 14 - Feb 2023

Appearance



Dimensions

Unit : mm



Ordering Information

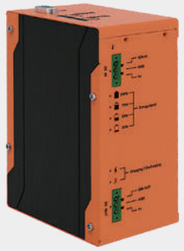
Model No.	Product Description
PB-9250J-110V	9250 w·s Standalone Supercapacitor-based UPS Module with 110V DC input for Railway Application

Optional Accessories

Wmkit-V-PB9250J-110V	Wall-mount assembly for PB-9250J-110V, vertical type

PB-9250J-SA/ PB-4600J-SA/ PB-2580J-SA

Industrial-grade Standalone Intelligent Supercapacitor-based Uninterruptible Power Backup Module



CE FC

Key Features

- **Universal standalone power backup module compatible with all box-PCs**
- **Supercapacitor-based, -25 to 65°C wide temperature operation**
- **Up to 9250 watt-second energy capacity**
- **Maximum 180W output power for the connected back-end system**
- **Over 10 years lifespan, and 500,000 charging/ discharging cycles**
- **Patented CAP energy management technology***
- **Extending back-up time in the event of an unforeseen power outage**
- **Monitoring energy and power consumption to extend operation time for safe system shutdown**
- **Versatile operating mode**
  - **Normal backup mode**
  - **Ignition control mode for standard box-PC and in-vehicle controller**
- **EN50155 certificate**

**R.O.C Patent No. I598820*

Introduction

The PB series is a standalone power backup module that can protect your box-PC against power outages. Utilizing state-of-the-art supercapacitor technology, it can operate in harsh environments from -25°C to 65°C and have extremely high durability lasting over 10 years.

PB-9250J-SA and PB-4600J-SA are composed of eight and four 370F/ 3.0V supercapacitors, respectively, while PB-2580J-SA is composed of eight 100F/ 2.7V supercapacitors. They each offer 9250, 4600 and 2580 watt-second energy to offer extra extended operation time to backup your system.

Thanks to Neousys' patented CAP energy management technology, It can reliably supply up to 180W of power to the back-end system and automatically manage boot and shutdown without installing additional drivers/ software. In addition to the UPS-like power backup mode, it also offers two advanced ignition control modes for in-vehicle usage.

PB-9250J-SA can work with either standard box-PC or in-vehicle controller to provide a stable power supply and execute user-configurable power-on/ power-off delay according to IGN signal input. Featuring various modes, automatic shutdown control and up to 180W output power, Neousys PB series can work with most off-the-shelf box-PCs. And with properties such as maintenance-free energy storage and uninterruptible power supply, the PB series can prevent the connected back-end system from data loss during a power outage in harsh industrial environments!

Specifications

	PB-9250J-SA	PB-4600J-SA	PB-2580J-SA
Supercapacitor Configuration			
Composition	8x 370F, 3.0V supercapacitors	4x 370F, 3.0V supercapacitors	8x 100F, 2.7V supercapacitors
Capacity	9250 watt-second	4600 watt-second	2580 watt-second
Expected lifespan	>10 years *		
Lifecycle	500,000 charging/ discharging cycles*		
Power Specification			
Input Voltage	12 to 35V DC input		
Input Connector	1x 3-pin pluggable terminal block (V+, GND, IGN_IN)		
Output Voltage	Charge mode: DC_IN bypass (DC_OUT = DC_IN) Discharge mode: 12 or 24V***		
Output Power	Maximum 180W output**	Maximum 100W output**	Maximum 70W output**
Output Connector	1x 3-pin pluggable terminal block (V+, GND, IGN_OUT)		
I/O Interface			
COM Port	1x DB9 for 3-wire RS-232		
Isolated DIO	1x 10-pin pluggable terminal block for - PWR_BTN# output - SYS_STAT input		

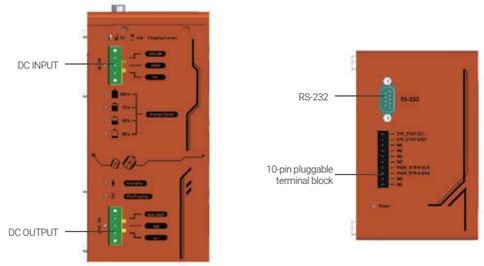
	PB-9250J-SA	PB-4600J-SA	PB-2580J-SA
Mechanical			
Dimension	82.5mm(W) x 175.2mm(H) x 128.2mm(D)		32.8mm(W) x 176.6mm(H) x 126mm(D)
Weight	1.7 kg	1.68 kg	0.93 kg
Mounting	DIN-rail mount (standard) or Wall-mount (optional)		
Environmental			
Operating Temperature	-25°C to 65°C -40°C to 85°C with reduced energy capacity		
Storage Temperature	-40°C to 85°C		
Vibration	Compliant with IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)		Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Compliant with IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)		Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	Compliant with EN50155:2007, CE/FCC Class A, according to EN 55032 & EN 55035		CE/FCC Class A, according to EN 55032 & EN 55024

** To achieve > 10 years lifespan under 24/7 at 65°C operation, please charge PB-9250J-SA to 6525J energy level using the 4.8x SuperCAP Lifetime Extension setting (please refer to the user manual for details). Once the rated lifetime or cycle life has been reached, the capacity of supercapacitor may decrease up to 30% and ESR may increase up to 100% from initial values.*
*** Backup time for uninterruptible operation may be reduced when sustaining a back-end system with high power consumption. Please consult with Neousys Technology if your computer accepts only constant-voltage input.*
**** To ensure PB-9250J and PB-4600J's power backup operation functions as intended, please contact Neousys Technology technical support if your connecting back-end system accepts only constant voltage input.*

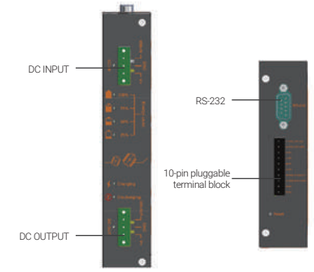
Last updated: 23 - Sep 2021

Appearance

PB-9250J-SA/ PB-4600J-SA



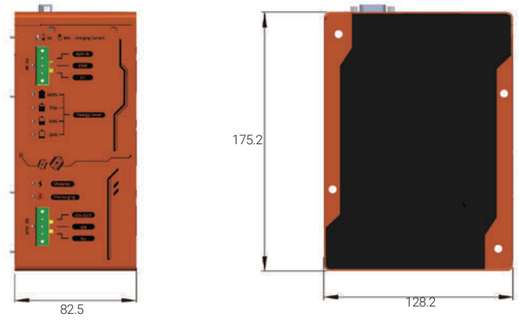
PB-2580J-SA



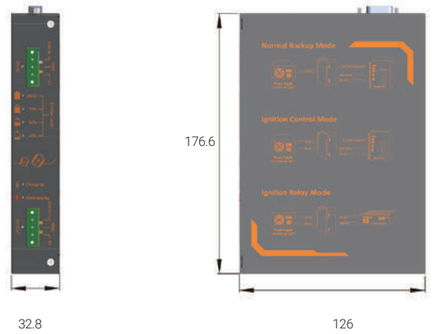
Dimensions

Unit : mm

PB-9250J-SA/ PB-4600J-SA



PB-2580J-SA



Ordering Information

Model No.	Product Description
PB-9250J-SA	Standalone intelligent supercapacitor-base power backup module with 9250 W•s energy capacity
PB-4600J-SA	Standalone intelligent supercapacitor-base power backup module with 4600 W•s energy capacity
PB-2580J-SA	Standalone intelligent supercapacitor-base power backup module with 2580 W•s energy capacity

Optional Accessories

Wmkit-V-PB9250J	Wall-mount assembly for PB Series, vertical type

PB-2500J Series

Industrial-grade Intelligent Supercapacitor-based Uninterruptible Power Backup Module

CE FC

Key Features

- **Supercapacitor-based, -25 to 65°C wide temperature operation**
- **2500 watt-second energy capacity**
- **Up to 10 years lifespan and 500,000 charging/ discharging cycles**
- **Patented CAP energy management technology***
  - **Maximizes back-up time in an event of unforeseen power outage**
  - **Monitors energy consumed and estimates the time required for system shutdown**
- **User-configurable operating parameters**
  - **Auto/ manual shutdown control**
  - **High/ low voltage protection**
  - **UltraCAP energy/ lifespan configuration**

**R.O.C Patent No. I598820*

Introduction

Neousys' PB-2500J series is an innovative power backup solution for demanding industrial applications. Utilizing supercapacitor technology, it features -25°C to 65°C operating temperature range and extremely high durability. Compared to traditional battery-based UPS systems, PB-2500J series can sustain superb reliability in extreme temperature environments and eliminates the drawback of battery performance degradation over time.

PB-2500J series is composed of eight 100F supercapacitors to provide 2500 watt-second stored energy to sustain your computer during power outage and depending on your system's power consumption, it could be from seconds to minutes. But what makes PB-2500J novel is its patented CAP energy management technology, an on-board processor that constantly monitors power consumption and evolves with the system. During a power outage, it maximizes the system operation time by estimating the perfect time to initiate system shutdown to prevent data loss.

PB-2500J series is available in two form-factors; PB-2500J-PCIe is a plug-and-play PCIe card specifically designed for Neousys Nuvo-6000 (except Nuvo-6108GC/ IGN) while PB-2500J-CSM is designed for Nuvo-5000E/ P and Nuvo-7000E/ P series.

When it comes to industrial embedded controllers, stability and data loss prevention during power outages are just as important. Neousys' PB-2500J series aims to redefine reliability and take it to another level. With PB-2500J series, unexpected power loss and unstable power lines are a thing in the past!

Specifications

	PB-2500J-PCIe	PB-2500J-CSM
Supercapacitor configuration	8x 100F, 3.0V ultracapacitors	
Capacity	2500 watt-second	
Expected lifespan	>10 years @ 25°C with 2500 w·s capacity* 76,000 hours @ 35°C with 2500 w·s capacity* 34,000 hours @ 45°C with 2500 w·s capacity* 15,000 hours @ 55°C with 2500 w·s capacity* 7,200 hours @ 65°C with 2500 w·s capacity* Expected lifespan is 2.2x when configured as 2100 watt-second energy capacity, or 4.8x when configured as 1750 watt-second energy capacity.	
Lifecycle	500,000 charging/ discharging cycles*	
Communication interface	3-wire RS-232	
Dimension	Half-length PCIe card 167 mm (W) x 111 mm (H)	-
Operating Temperature	-25°C to 65°C	
Storage Temperature	-40 °C to 70°C	
EMC	CE/FCC Class A, according to EN 55022 & EN 55024	

**Once the rated lifespan or cycle life has been reached, the capacity of ultracapacitor may decrease up to 30% and ESR may increase up to 100% from initial values.*

Ordering Information

Model No.	Product Description
PB-2500J-PCIe	Intelligent supercapacitor-based power backup PCIe card with 2500 w·s energy capacity
PB-2500J-CSM5	Intelligent supercapacitor-based power backup Cassette module with 2500 w·s energy capacity, for Nuvo-5000 series
PB-2500J-CSM7	Intelligent supercapacitor-based power backup Cassette module with 2500 w·s energy capacity, for Nuvo-7000 series

****Note: NOT compatible with Nuvo-6108GC, Nuvo-6108GC-IGN and Nuvo-8208GC***

Last updated: 15 - Jan 2020

IoT Gateway

IGT-33V/ IGT-34C

TI Sitara™ AM3352 ARM-based Industrial IoT Gateway with Analog Inputs and Pre-installed Debian

Key Features

- **Industrial grade ARM-based system with pre-installed Debian**
- **Built-in isolated analog input and DI/O channels**
- **Dual LAN and COM ports for expend**
- **12 to 25V wide-range DC input and 802.3at PoE+ PD**
- **-25°C to 70°C wide temperature operation**

Introduction

Neousys IGT-30 series, equipped with AM3352 from Texas Instrument's Sitara AM335x family, is an ARM-based Box PC aimed at Industrial Internet of Things (IIoT) Gateway and Industry 4.0 applications. As required by any industrial applications, IGT-30 series is shipped as a ready system pre-installed with Debian and in compliance with common industrial certifications such as CE/FCC, shock and vibration. It has a power input range of 12 to 25 VDC and a wide operating temperature from -25°C to 70°C to ensure IGT-30 series continues to function under harsh industrial conditions.

IGT-33V/ 34C have rich I/Os for users to connect to a raviety of industrial sensors and devices. It features one USB 2.0 port, dual 10/100M LAN ports and two COM ports (one RS-485, one configurable RS-232/422/485). In addition, IGT-33V/ 34C also integrate analog and digital ports, such as eight 0-10V voltage inputs for IGT-33V and four 4-20mA current inputs for IGT-34C. There are also two built-in isolated digital inputs for button/switch and six digital outputs for actuators or modules controll. User can easily build their own private serial automation or IIoT system.

Communication wise, IGT-30 series has a mini PCIe slot and a USIM holder allowing it to transmit acquired data and system status via 3G, 4G or WiFi (mini PCIe WiFi module). There is an opening on top of IGT-30 series for users to mount the SMA connector of the wireless module. In terms of storage, IGT-30 series has dual microSDHC slots, one internal and one external. This design allows users to separate system/ user data and can expedite in OS deployment for mass production. Inherited from IGT-20, IGT-30 series provides six LED indicators and two function buttons that can be programmed by users. The function buttons can act as controls for IGT-30 series and exclude the need for external input devices, such as keyboard/ mouse.

Specifications

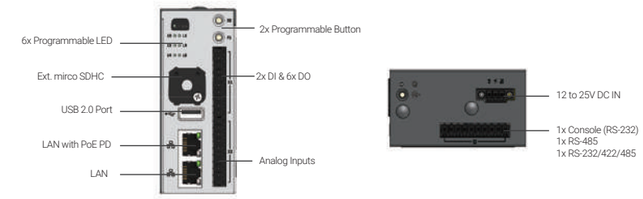
	IGT-33V	IGT-34C
System Core		
Processor	TI Sitara AM3352 1GHz processor	
Memory	1GB DDR3L SDRAM	
Front-panel I/O Interface		
Ethernet	2x 10/100 LAN, 1 with PoE PD	
USB 2.0	1x USB 2.0	
SD Card	1x external T-flash socket support miscro SDHC	
Function Buttons	2x user programmable buttons	
User LEDs	6x user programmable LEDs	
Isolated DIO	2x digital input 6x digital output	
Analog Input	8x 16 bit 0-10V/ ±5V/ ±10V Voltage Input	4x 16 bit 4-20mA/ 0-20mA Current Input
Top I/O Interface		
DC IN	1x DC INput connector	
Power Button	1x power button	
Reset Button	1x reset button	
Console	1x RS-232 as Console Port	
Serial Port	1x RS-232/422/485 1x RS-485	
Antenna Hole	2x antenna hole for WiFi and 3G/LTE	

	IGT-33V	IGT-34C
Internal I/O Interface		
SD Card	1x internal T-flash socket support micro SDHC	
mPCIe	1x full size mPCIe	
SIM Card	1x internal SIM socket	
Software		
Operating System	Debian 9 pre-installed	
Power Supply		
DC Input Range	12 to 25V DC input	
PoE+ PD	IEEE 802.3at PoE+ PD	
Mechanical		
Dimension	43mm (W) x 77mm (D) x 104mm (H)	
Weight	0.5 Kg	
Mounting	DIN-rail mount	
Environmental		
Operating Temperature	-25°C to 70°C *	
Storage Temperature	-40°C to 85°C	
Humidity	5Grms	
Shock	50Grms	
EMC	CE/FCC Class A, according to EN55032 & EN55024	

** For sub-zero operating temperature, a wide temperature microSD module is required.*

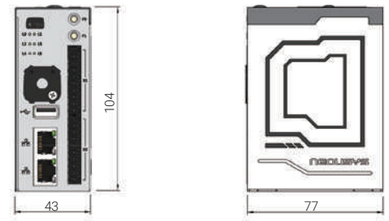
Last updated: 15 - Jan 2020

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
IGT-33V	Industrial grade ARM-based IoT gateway with 0-10V analog inputs, dual LAN and PoE PD enable
IGT-34C	Industrial grade ARM-based IoT gateway with 4-20mA analog inputs, dual LAN and PoE PD enable

Optional Accessories

NSIO-LTE-7455	Cat. 6 LTE embedded socket modem

IGT-30D/ IGT-31D

TI Sitara™ AM3352 ARM-based Industrial IoT Gateway with Dual LAN and Pre-installed Debian

Key Features

- **Industrial grade ARM-based system with pre-installed Debian**
- **Microsoft Azure and AWS Greengrass Certified for IoT**
- **Field-ready isolated DI/O and RS-232/422/485**
- **12 to 25V wide-range DC input and 802.3at PoE+ PD**
- **-25°C to 70°C wide temperature operation**

Introduction

Neousys IGT-30 series, equipped with AM3352 from Texas Instrument's Sitara AM335x family, is an ARM-based Box PC aimed at Industrial Internet of Things (IIoT) Gateway and Industry 4.0 applications. As required by any industrial applications, IGT-30 series is shipped as a ready system pre-installed with Debian and in compliance with common industrial certifications such as CE/FCC, shock and vibration. It has a power input range of 12 to 25 VDC and a wide operating temperature from -25°C to 70°C to ensure IGT-30 continues to function under harsh industrial conditions.

IGT-30 series supports PoE Powered Device (PD) mode meaning it can be powered by a LAN cable from a PoE Power Sourcing Equipment (PSE), and at the same time transfer data via this cable as well. IGT-30 series has I/Os that are applicable to a range of industrial grade sensors. It features one USB 2.0 port, two 10/100M LAN ports, one configurable COM port (RS-232/ 422/ 485) and an optional CAN bus port (IGT-31D only). In addition to the ports mentioned, there are also 8 built-in isolated digital input channels that accept discrete signals from various sensors or buttons/ switches. There are also 2 built-in isolated digital output channels to control actuators and indicators.

Communication wise, IGT-30 series has a mini PCIe slot and a USIM holder allowing it to transmit acquired data and system status via 3G, 4G or WiFi (mini PCIe WiFi module). There are two openings on top of IGT-30 series for users to mount the SMA connector of the wireless module. In terms of storage, IGT-30 series has dual microSDHC slots, one internal and one external. This design allows users to separate system/ user data and can expedite in OS deployment for mass production. Inherited from IGT-20, IGT-30 series provides six LED indicators and two function buttons that can be programmed by users. The function buttons can act as controls for IGT-30 series and exclude the need for external input devices, such as keyboard/ mouse.

Specifications

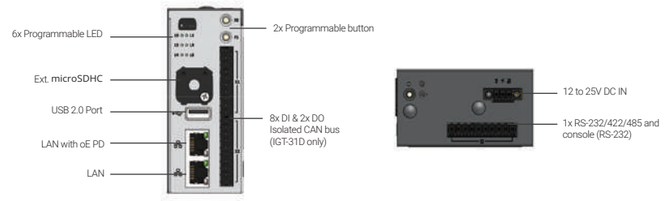
System Core	
Processor	TI Sitara AM3352 1GHz processor
Memory	1GB DDR3L SDRAM
Front-panel I/O Interface	
Ethernet	2x 10/100 LAN
SD Card	1x external T-flash socket support microSDHC
USB	1x USB 2.0
Isolated DIO	8-CH isolated DI and 2-CH isolated DO
Serial Port	1x software configurable RS-232/422/485
User LEDs	6x user programmable LEDs
Function Buttons	2x user programmable buttons
CAN	1x isolated CAN bus 2.0 A/B (IGT-31D only)
Top I/O Interface	
DC IN	1x DC INput connector
Power Button	1x power button
Reset Button	1x reset button
Console	1x RS-232 as Console Port
Antenna Hole	2x antenna hole for WiFi and 3G/ LTE

Internal I/O Interface	
mPCIe	1x full size mPCIe
SD Card	1x internal T-flash socket support microSDHC
SIM Card	1x internal SIM socket
Software	
Operating System	Debian 9 pre-installed
Power Supply	
DC input range	12 to 25V DC input
PoE+ PD	IEEE 802.3at PoE+ PD
Mechanical	
Dimension	43mm(W) x 77mm(D) x 104mm(H)
Weight	0.5 Kg
Mounting	DIN-rail mount
Environmental	
Operating Temperature	-25°C to 70°C *
Storage temperature	-40°C to 80°C *
Humidity	10% to 90%, non-condensing
Vibration	5Grms
Shock	50Grms
EMC	CE/FCC Class A, according to EN55032 & EN55024

** For sub-zero operating temperature, a wide temperature microSD module is required.*

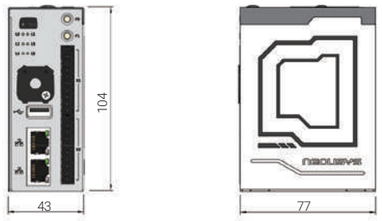
Last updated: 15 - Jan 2020

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
IGT-30D	Industrial grade ARM-based IoT gateway with dual LAN and PoE PD enabled
IGT-31D	Industrial grade ARM-based IoT gateway with dual LAN, CAN bus and PoE PD enabled

Optional Accessories

NSIO-LTE-7455	Cat. 6 LTE embedded socket modem

IGT-20/ IGT-21/ IGT-22

Industrial Grade ARM-based Smart Wireless IoT Gateway with ARM Cortex A8, Dual T-Flash (microSD), and Pre-installed Debian

Key Features

- **Industrial grade ARM-based system with pre-installed Debian**
- **Microsoft Azure and AWS Greengrass Certified for IoT**
- **Field-ready isolated DI/O and serial ports**
- **8 to 25V wide-range DC input**
- **-25°C to 70°C wide temperature operation**

Introduction

Neousys IGT-20 series, equipped with AM3352 from Texas Instrument's Sitara AM335x family, is an ARM-based Box PC aimed at Industrial Internet of Things (IIoT) Gateway and Industry 4.0 applications. As required by any industrial applications, IGT-20 series is shipped as a ready system preinstalled with Debian and is in compliance with common industrial certifications such as CE/FCC, shock and vibration. It has a power input range of 8 to 25 VDC and a wide operating temperature from -25°C to 70°C to ensure IGT-20 series continues to function under harsh industrial conditions.

IGT-20 series has I/Os that are applicable to a range of industrial grade sensors. It features one USB 2.0, one 10/100M LAN, COM ports and an optional CAN bus port (IGT-21 only). In addition to the ports mentioned, there are built-in isolated digital input channels that accept discrete signals from various sensors, buttons or switches. There are also built-in isolated digital output channels to control actuators and indicators.

Communication wise, IGT-20 series has a mini PCIe slot and an external USIM holder allowing it to transmit acquired data and system status via 3G, 4G or WiFi (mini PCIe WiFi module). There is an opening on top of IGT-20 series for users to mount the SMA connector of the wireless module. In terms of storage, IGT-20 series has dual microSDHC slots, one internal and one external. This design allows users to separate system/ user data and can expedite in OS deployment for mass production. IGT-20 series also provides six LED indicators and two function buttons that can be programmed by users. The function buttons can act as controls for IGT-20 series and exclude the need for external input devices, such as keyboard/ mouse.

Specifications

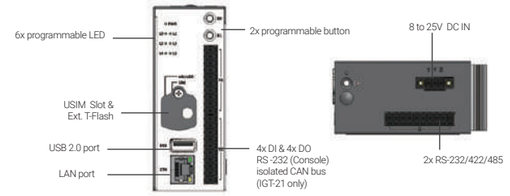
	IGT-20	IGT-21	IGT-22
System Core			
Processor	TI Sitara AM3352 1GHz processor		
Memory	1GB DDR3L SDRAM		
RTC	-	-	Yes
Front-panel I/O Interface			
Ethernet	1x 10/100M Ethernet		
SD Card	1x external T-flash socket support SDHC		
SIM Card	1x external SIM socket		
USB 2.0	1x USB 2.0		
Isolated DI/O	4-CH isolated DI and 4-CH isolated DO		8-CH isolated DI and 8-CH isolated DO
Console	1x 3-wire RS-232 as Console Port		
User LEDs	6x user programmable LEDs		
User Buttons	2x user programmable buttons		
CAN	-	1x CAN bus 2.0 A/B	-
Top I/O Interface			
DC IN	1x DC INput connector		
Power Button	1x power button		
Reset Button	1x reset button		
Serial Port	2x software configurable RS-232/ 422/ 485		1xRS-232 and 1x RS-485
Antenna Opening	1x antenna opening for WiFi and 3G/LTE		

	IGT-20	IGT-21	IGT-22
Internal I/O Interface			
mPCIe	1x full size mPCIe with USB 2.0 only		
SD Card	1x internal T-flash socket support SDHC		
Software			
Operating System	Pre-installed Debian 8		Pre-installed Debian 9
Power Supply			
DC input range	8 to 25V DC input		
Mechanical			
Dimension	41mm(W) x 77mm(D) x 104mm(H)		
Weight	0.4 Kg		
Mounting	DIN-rail mount		
Environmental			
Operating Temperature	-25°C to 70°C *		
Vibration	5Grms		
Shock	50Grms		
EMC	CE/FCC Class A, according to EN 55032		

** For sub-zero operating temperature, a wide temperature microSD module is required.*

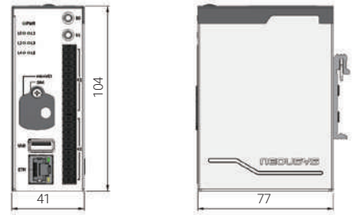
Last updated: 15 - Jan 2020

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
IGT-20	Industrial grade ARM-based IoT gateway with 4DI and 4DO
IGT-21	Industrial grade ARM-based IoT gateway with 4DI, 4DO and CAN bus
IGT-22	Industrial grade ARM-based IoT gateway with 8DI and 8DO

Optional Accessories

NSIO-LTE-7455	Cat. 6 LTE embedded socket modem

In-vehicle Computing

Nuvo-9200VTC Series

Intel® 14th/ 13th/ 12th-Gen Core™ in-vehicle controller with 4x M12/ 4x RJ45 / 8x RJ45 PoE+ ports, single-slot PCIe Cassette

CE FC EN50121 EN45545 E24

Key Features

- **Supports Intel® 14th/ 13th/ 12th-Gen Core™ 24C/ 32T 35W/ 65W CPU**
- **4x or 8x 802.3at PoE+ ports via M12 or RJ45 connectors**
- **1x USB 3.2 Gen2x2 type-C and 8x USB 3.2/ 2.0 type-A ports**
- **On-board isolated CAN bus for in-vehicle communication**
- **4-CH isolated DI and 4-CH isolated DO**
- **M.2 Gen4 x4 NVMe SSD slot**
- **2x hot-swappable SATA HDD trays, supporting RAID 0/ 1**
- **8V to 48V wide-range DC input with built-in ignition power control**
- **Patented Cassette for PCIe add-on card accommodation**
- **E-Mark/ EN 45545 certified and EN 50155 EMC compliant**

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

Introduction

Nuvo-9200VTC is Neousys' latest rugged in-vehicle controller based on Intel® 14th/ 13th/ 12th-Gen Core™ processors. Benefiting from cutting-edge Intel® 7 photolithography, the latest Core™ desktop processors come with up to 24 cores/ 32 threads, offering an incredible boost of computational performance. Combining DDR5 memory bandwidth throughput and PCIe Gen4 NVMe high-speed disk read/write, users can expect an overall system performance improvement of up to 1.8x when compared to previous 10th or 11th-Gen platforms.

Nuvo-9200VTC offers an assortment of peripherals, connections, and expansion flexibility. It has 2.5Gb and 1Gb Ethernet ports, and four or eight 802.3at PoE+ ports to supply 25W of power to connected devices such as IP cameras. The system also has x-coded M12 connectors and screw-lock mechanisms on I/Os like Ethernet, USB 3.2 Gen1 and USB 3.2 Gen2 to guarantee extreme rugged connectivity in shock/ vibration environments. Internal expansion wise, there are two M.2 and three mini-PCIe sockets to install 5G/ 4G, WiFi, GPS, and CAN module for wireless communication.

On top of all that, the system is E-Mark/ EN 45545 certified and EN 50155 EMC compliant and has a patented Cassette module with an additional PCIe slot for an add-on card, making it that much more flexible for in-vehicle applications. Nuvo-9200VTC also features two hot-swappable SATA HDD trays, an isolated CAN bus for in-vehicle communication, isolated DIO for sensor/ actuator control, 8V to 48V wide-range DC input with ignition power control. The Nuvo-9200VTC series is a flexible and reliable solution for various in-vehicle applications.

Specifications

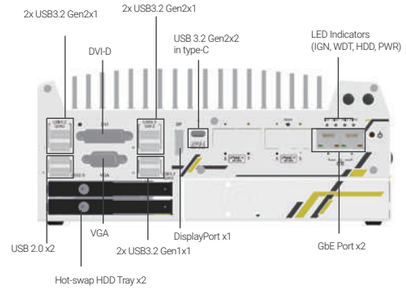
System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU (LGA1700 socket, 65W/ 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	Support 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)	
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet port	1x 2.5G Ethernet by I225-IT and 1x Gigabit Ethernet by I219-LM with screw-lock	
PoE+	4x IEEE 802.3at Gigabit PoE+ ports by Intel® I210 - M12 X-coded connector (Nuvo-9200VTC) - RJ45 connector (Nuvo-9204VTC) 4x IEEE 802.3at Gigabit PoE+ ports by Intel® I210 and 4x 2.5G PoE+ ports by I225-IT - RJ45 connector (Nuvo-9208VTC)	
USB 3.2	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	
USB 2.0	2x USB 2.0 ports	
CAN Bus	1x isolated CAN 2.0 port	
Video Port (Integrated Graphics)	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/COM2) 2x RS-232 ports (COM3/COM4)	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Storage Interface		
SATA HDD	2x hot-swappable HDD trays for 2.5" HDD/ SSD installation, supporting RAID 0/ 1	

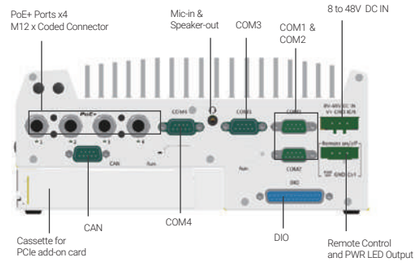
Storage Interface	
SATA HDD	2x hot-swappable HDD trays for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
Expansion Bus	
PCI/PCI Express	1x PCIe x16 slot@Gen3, 16-lanes PCIe signals in Cassette
Mini PCI Express	1x full-size mini-PCIe socket 2x full-size mini-PCIe sockets (USB signals only) with internal SIM sockets
M.2	1x M.2 2242/3052 B key socket with SIM slot for M.2 5G/ 4G module 1x M.2 2242/3052 B key socket with SIM slot for M.2 4G module
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 48V DC input (IGN/ GND/ V+)
Ignition Control	Built-in ignition power control
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 103 mm (H)
Weight	3.9kg
Mounting	Wall-mount with damping bracket
Environmental	
Operating Temperature	**With 35W CPU** -40°C ~ 70°C[1] (with 1 memory module installed) -40°C ~ 60°C[2][3] ((with 2 memory modules installed) **With 65W CPU** -40°C ~ 50°C[2][3] (configured as 65W TDP with 2-slots memory)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
Shock	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
EMC	E-Mark, EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035
EN 45545	EN 45545-2

[1] Due to high heat generation of DDR5 memory, please configure the CPU to 35W mode and utilize only one memory slot, while operating at a temperature of 70°C.
[2] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[3] 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.

Last updated: 2 - Jan 2025

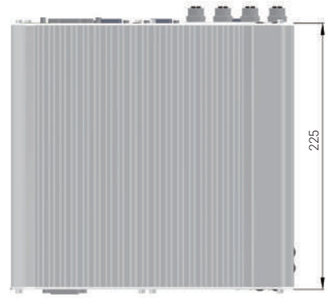
Appearance

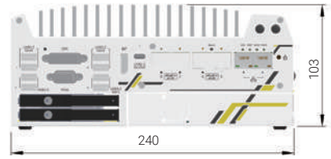




Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9200VTC	Intel® 14th/13th/ 12th-Gen Core™ in-vehicle controller with 4x M12 PoE+ Ports, DIO, CAN bus and RAID, single-slot PCI Express Cassette
Nuvo-9204VTC	Intel® 14th/13th/ 12th-Gen Core™ in-vehicle controller with 4x RJ45 PoE+ Ports, DIO, CAN bus and RAID, single-slot PCI Express Cassette
Nuvo-9208VTC	Intel® 14th/13th/ 12th-Gen Core™ in-vehicle controller with 8x RJ45 PoE+ Ports, DIO, CAN bus and RAID, single-slot PCI Express Cassette

Optional Accessories

Cbl-M12X8M-RJ45-CAT5e-500CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 500CM
Cbl-M12X8M-RJ45-CAT5e-1000CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 1000CM
Fankit-25	Fan assembly for 1-slot Cassette, 25x25x10 mm
PA-280W-ET3	280W AC-DC power Adapter(GST280A24-YI), 24V 11.67A, 85~264VAC 120~370VDC, C6P Plug, w/ terminal block, -30 to 70°C

Nuvo-9100VTC Series

Intel® 14th/ 13th/ 12th-Gen Core™ in-vehicle controller with 4x M12/ 4x RJ45 / 8x RJ45 PoE+ ports

Key Features

- **Supports Intel® 14th/ 13th/ 12th-Gen Core™ 24C/ 32T 35W/ 65W CPU**
- **4x or 8x 802.3at PoE+ ports via M12 or RJ45 connectors**
- **1x USB 3.2 Gen2x2 type-C and 8x USB 3.2/ 2.0 type-A ports**
- **On-board isolated CAN bus for in-vehicle communication**
- **4-CH isolated DI and 4-CH isolated DO**
- **M.2 Gen4 x4 NVMe SSD slot**
- **8V to 48V wide-range DC input with built-in ignition power control**
- **2x SATA ports with 1x hot-swappable HDD tray, supporting RAID 0/1**
- **E-Mark/ EN 45545 certified and EN 50155 EMC compliant**

Introduction

Nuvo-9100VTC is Neousys' latest rugged in-vehicle controller based on Intel® 14th/ 13th/ 12th-Gen Core™ processors. Benefiting from cutting-edge Intel® 7 photolithography, the latest Core™ desktop processors come with up to 24 cores/ 32 threads, offering an incredible boost of computational performance. Combining DDR5 memory bandwidth throughput and PCIe Gen4 NVMe high-speed disk read/write, users can expect an overall system performance improvement of up to 1.8x when compared to previous 10th or 11th-Gen platforms.

Nuvo-9100VTC provides flexibility to support a range of peripherals and connections. It has 2.5Gb and 1Gb Ethernet ports, and four or eight 802.3at PoE+ ports to supply 25W of power to connected devices such as IP cameras. The system also has x-coded M12 connectors and screw-lock mechanisms on the computer I/Os like Gigabit Ethernet, USB 3.2 Gen1 and USB 3.2 Gen2 to guarantee extreme rugged connectivity in shock/ vibration environments. Wireless connectivity is essential for modern-day in-vehicle applications, and you can simultaneously utilize two M.2 and three mini-PCIe sockets with corresponding wireless modules for 5G/ 4G, WiFi, GPS, and CAN module for communication.

On top of all that, Nuvo-9100VTC also features an isolated CAN bus for in-vehicle communication, isolated DIO for sensor/ actuator control, 8V to 48V wide-range DC input with ignition power control, and is E-Mark/ EN 45545 certified and EN 50155 EMC compliant, making it the perfect solution with extraordinary reliability for various in-vehicle applications.

Specifications

System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	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	Support 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)	
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	

I/O Interface	
Ethernet port	1x 2.5G Ethernet by I225-IT and 1x Gigabit Ethernet by I219-LM with screw-lock
PoE+	4x IEEE 802.3at Gigabit PoE+ ports by Intel® I210 - M12 X-coded connector (Nuvo-9100VTC) - RJ45 connector (Nuvo-9104VTC) 4x IEEE 802.3at Gigabit PoE+ ports by Intel® I210 and 4x 2.5G PoE+ ports by I225-IT - RJ45 connector (Nuvo-9108VTC)
USB 3.2	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
USB 2.0	2x USB 2.0 ports
CAN Bus	1x isolated CAN 2.0 port
Video Port (Integrated Graphics)	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/COM2) 2x RS-232 ports (COM3/COM4)
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Audio	1x 3.5 mm jack for mic-in and speaker-out

Storage Interface	
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD
SATA HDD	1x hot-swappable 2.5" HDD tray (7mm HDD/ SSD) and 1x internal 2.5" SATA ports

Expansion Bus	
Mini PCI Express	1x full-size mini-PCIe socket 2x full-size mini-PCIe sockets (USB signals only) with internal SIM sockets
M.2	1x M.2 2242/3052 B key socket with SIM slot for M.2 5G/ 4G module 1x M.2 2242/3052 B key socket with SIM slot for M.2 4G module

Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 48V DC input (IGN/ GND/ V+)
Ignition Control	Built-in ignition power control
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output

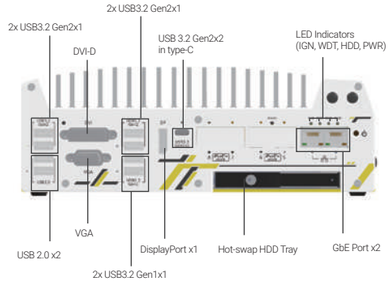
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 84 mm (H)
Weight	3.7kg
Mounting	Wall-mount with damping bracket

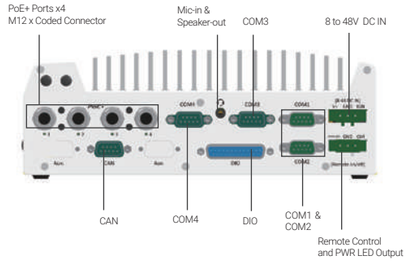
Environmental	
Operating Temperature	**With 35W CPU** -40°C ~ 70°C[1] (with 1 memory module installed) -40°C ~ 60°C[2][3] ((with 2 memory modules installed) **With 65W CPU** -40°C ~ 50°C[2][3] (configured as 65W TDP with 2-slots memory)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
Shock	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
EMC	E-Mark, EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035
EN 45545	EN 45545-2

[1] Due to high heat generation of DDR5 memory, please configure the CPU to 35W mode and utilize only one memory slot, while operating at a temperature of 70°C.
[2] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[3] 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.

Last updated: 2 - Jan 2025

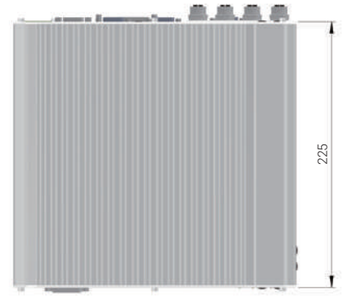
Appearance

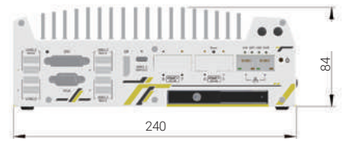




Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9100VTC	Intel® 14th/ 13th/ 12th-Gen Core™ in-vehicle controller with 4x M12 PoE+ Ports, DIO, CAN bus and RAID
Nuvo-9104VTC	Intel® 14th/ 13th/ 12th-Gen Core™ in-vehicle controller with 4x RJ45 PoE+ Ports, DIO, CAN bus and RAID
Nuvo-9108VTC	Intel® 14th/ 13th/ 12th-Gen Core™ in-vehicle controller with 8x RJ45 PoE+ Ports, DIO, CAN bus and RAID

Optional Accessories

Cbl-M12X8M-RJ45-CAT5e-500CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 500CM
Cbl-M12X8M-RJ45-CAT5e-1000CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 1000CM
PA-280W-ET3	280W AC-DC power Adapter(GST280A24-YI), 24V 11.67A, 85~264VAC 120~370VDC, C6P Plug, w/ terminal block, -30°C to 70°C

Nuvo-7200VTC Series

Intel® 9th/ 8th-Gen Core™ In-vehicle Controller with 4x or 8x PoE+ Ports, Single-slot PCIe Cassette

CE FC EN50121 E24

Key Features

- **Supports Intel® 9th/ 8th-Core™ i7/ i5/ i3 LGA1151 socket-type CPU**
- **Patented Cassette for PCIe add-on card accommodation***
- **4x or 8x 802.3at Gigabit PoE+ ports via M12 or RJ45 connectors**
- **Onboard isolated CAN bus for in-vehicle communication**
- **4-CH isolated DI and 4-CH isolated DO**
- **2x hot-swappable SATA HDD trays, supporting RAID 0/1**
- **2x M.2 B key and 3x full-size mini-PCIe sockets**
- **8 to 35V wide-range DC input with built-in ignition power control**
- **E-Mark certified and EN 50155 EMC compliant**

**R.O.C Patent No. M456527*

Introduction

Nuvo-7200VTC is the latest rugged in-vehicle controller featuring purpose-built set and effortless connectivity, powered by Intel® 9th/ 8th-Gen Core™ processors with up to 6-core/ 8-core architecture and 64GB DDR4 memory that gets a significant performance increase over previous generations.

Nuvo-7200VTC provides flexibility to support a range of peripherals and connections. It has four or eight 802.3at PoE+ ports to supply 25W power to connected devices via M12 or RJ-45 connectors. Screw-lock mechanisms on GbE and USB 3.1 ports guarantee extreme rugged connectivity in shock/ vibration environments. Wireless connectivity is essential for modern in-vehicle applications and you can simultaneously utilize two M.2 and three mini-PCIe sockets with corresponding 3G/ 4G, WIFI, GPS, and CAN module for this purpose. Additionally, Neousys provides an option of 4G cellular module certified to work with renowned US telecom company to minimize implementation time and cost.

Thanks to Neousys' patented Cassette design, it has one additional PCIe slot in the Cassette module for an add-on card installation, making it that much more flexible. Nuvo-7200VTC also features two hot-swappable HDD trays, isolated CAN bus, isolated DIO, 8 to 35V wide-range DC input with ignition power control and is E-Mark certified and EN 50155 EMC compliant. The Nuvo-7200VTC is the perfect solution with extraordinary reliability for various in-vehicle application needs.

Specifications

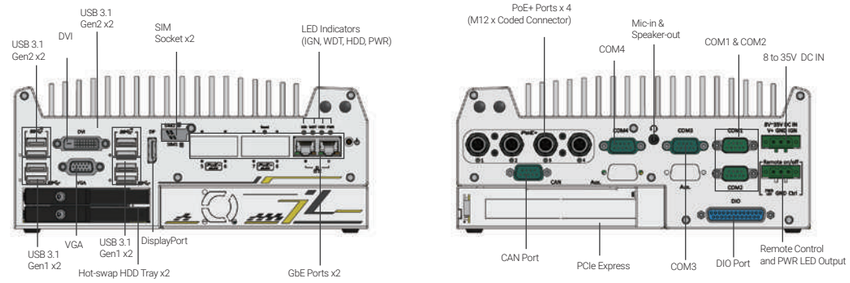
System Core	
Processor	Supporting Intel® 9th/ 8th-Gen Core™ CPU (LGA1151 socket, 35WTDP) - Intel® Core™ i7-9700TE/ i7-8700T - Intel® Core™ i5-9500TE/ i5-8500T - Intel® Core™ i3-9100TE/ i3-8100T
Chipset	Intel® Q370 platform controller hub
Graphics	Integrated Intel® UHD Graphics 630
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	2x Gigabit Ethernet ports by Intel® I219 and I210
PoE+	4x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 - M12 x-coded connector (Nuvo-7200VTC); - RJ45 connector (Nuvo-7204VTC) 8x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 - RJ45 connector (Nuvo-7208VTC)
CAN	1x isolated CAN 2.0 port
Isolated DIO	4x isolated DI and 4x isolated DO
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
Video Port	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Audio	1x mic-in and 1x speaker-out
Storage Interface	
SATA HDD	2x hot-swappable HDD tray for 2.5" HDD/ SSD installation, supporting RAID 0/1
mSATA	1x full-size mSATA port (mux with mini-PCIe)
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation

Expansion Bus	
PCI Express	1x PCIe x16 slot@Gen3, 16-lanes PCIe signals in Cassette
Mini PCI-E	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA) 2x full-size mini-PCIe sockets (USB signals only) with internal SIM sockets
M.2	2x M.2 2242 B key socket, one with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input (IGN/ GND/ V+)
Remote Ctrl. & Status Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 103mm (H)
Weight	3.7 kg
Mounting	Wall-mount with damping brackets (Standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	-40°C ~ 70°C **/***
Storage Temperature	-40°C ~ 85°C
Humidity	10%~90% , non-condensing
Vibration	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Shock	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
EMC	E-Mark, EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035

*** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*
**** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

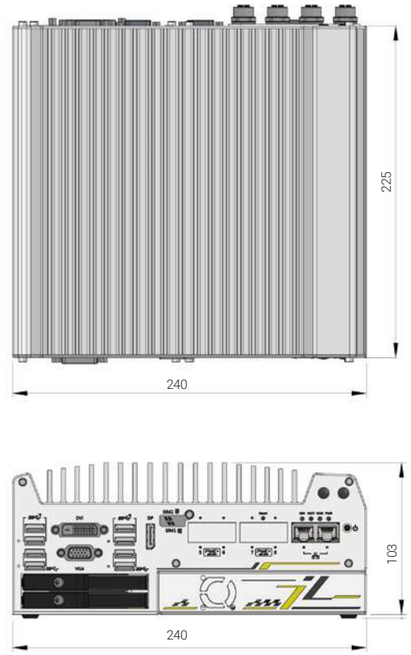
Last updated: 2 - Jan 2025

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-7200VTC	Intel® 9th/8th-Gen Core™ in-vehicle controller with 4x M12 PoE+ ports, DIO, CAN bus and RAID, single-slot PCI Express Cassette
Nuvo-7204VTC	Intel® 9th/8th-Gen Core™ in-vehicle controller with 4x RJ45 PoE+ ports, DIO, CAN bus and RAID, single-slot PCI Express Cassette
Nuvo-7208VTC	Intel® 9th/8th-Gen Core™ in-vehicle controller with 8x RJ45 PoE+ ports, DIO, CAN bus and RAID, single-slot PCI Express Cassette

Optional Accessories

Cbl-M12X8M-RJ45-CAT5e-500CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 500CM
Cbl-M12X8M-RJ45-CAT5e-1000CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 1000CM
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C.

Optional Cellular Module

NSIO-LTE-7455	Cat. 6 LTE embedded socket modem

Nuvo-7250VTC Series

Intel® 9th/ 8th-Gen Core™ In-vehicle Controller with 4x or 8x PoE+ Ports, Supercapacitor-based Power Backup Module

CE FC EN50121 EN45545 E24

Key Features

- **Supports Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 LGA1151 socket-type CPU**
- **Patented supercapacitor-based uninterruptible power backup***
- **4x or 8x 802.3at Gigabit PoE+ ports via M12 or RJ45 connectors**
- **Onboard isolated CAN bus for in-vehicle communication**
- **4-CH isolated DI and 4-CH isolated DO**
- **2x hot-swappable SATA HDD trays, supporting RAID 0/ 1**
- **2x M.2 B key and 3x full-size mini-PCIe sockets**
- **8 to 35V wide-range DC input with built-in ignition power control**
- **E-Mark/ EN45545 certified and EN 50155 EMC compliant**

**R.O.C Patent No. M456527/ I598820*

Introduction

Nuvo-7250VTC is a rugged in-vehicle controller that utilizes Neousys' innovative supercapacitor-based power backup solution. Powered by Intel® 9th/ 8th-Gen Core™ processors with up to 6-core/ 8-core and 64GB DDR4 memory, it offers over 50% performance increase over previous generations. Nuvo-7250VTC is equipped with supercapacitor technology to provide 2500 watt-second stored energy to sustain the system to safely shutdown during unforeseen power outages.

Nuvo-7250VTC offers a variety of peripherals and connections. It has four or eight 802.3at PoE+ ports to supply 25W power to connected devices via M12 or RJ-45 connectors. Screw-lock mechanisms on GbE and USB 3.1 ports guarantee extreme rugged connectivity in shock/ vibration environments. Internal expansion wise, it has two M.2 and three mini-PCIe sockets for corresponding modules such as 3G/ 4G, WIFI, GPS, and CAN module. Additionally, Neousys provides an option of 4G cellular module certified to work with renowned US telecom company to minimize implementation time and cost.

To top it off, Nuvo-7250VTC also features two hot-swappable HDD trays, isolated CAN bus, isolated DIO, 8 to 35V wide-range DC input with ignition power control and is E-Mark/ EN45545 certified and EN 50155 EMC compliant. Coupled with supercapacitor power backup technology, the Nuvo-7250VTC offers data protection and is the perfect solution for various in-vehicle applications.

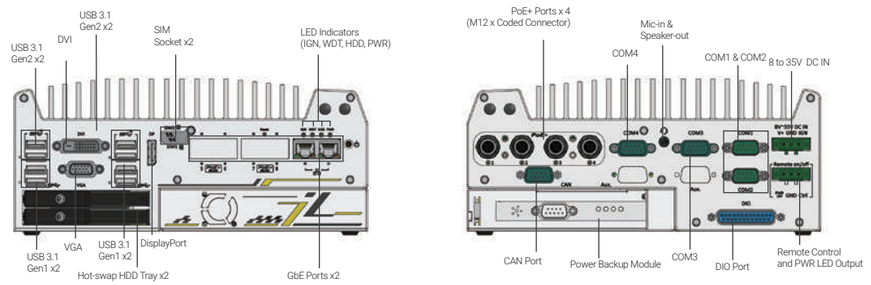
Specifications

System Core	
Processor	Supporting Intel® 9th/ 8th-Gen Core™ CPU (LGA1151 socket, 35WTDP) - Intel® Core™ i7-9700TE/ i7-8700T - Intel® Core™ i5-9500TE/ i5-8500T - Intel® Core™ i3-9100TE/ i3-8100T
Chipset	Intel® Q370 platform controller hub
Graphics	Integrated Intel® UHD Graphics 630
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	2x Gigabit Ethernet ports by Intel® I219 and I210
PoE+	4x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 - M12 x-coded connector (Nuvo-7250VTC); - RJ45 connector (Nuvo-7254VTC) 8x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 - RJ45 connector (Nuvo-7258VTC)
CAN	1x isolated CAN 2.0 port
Isolated DIO	4x isolated DI and 4x isolated DO
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
Video Port	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Audio	1x mic-in and 1x speaker-out
Storage Interface	
SATA HDD	2x hot-swappable HDD tray for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
mSATA	1x full-size mSATA port (mux with mini-PCIe)
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation

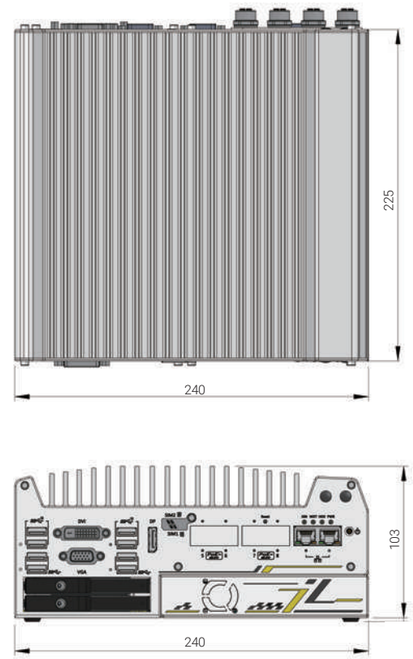
Expansion Bus	
Mini PCI-E	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA) 2x full-size mini-PCIe sockets (USB signals only) with internal SIM sockets
M.2	2x M.2 2242 B key socket, one with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input (IGN/ GND/ V+)
Remote Ctrl. & Status Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Power Backup	
Capacity	2500 watt-second
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 103mm (H)
Weight	4.1 kg
Mounting	Wall-mount with damping brackets (Standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	-40°C ~ 70°C **/***
Storage Temperature	-40°C ~ 85°C
Humidity	10%~90% , non-condensing
Vibration	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Shock	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
EMC	E-Mark, EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035
EN 45545	EN 45545-2 (Nuvo-7258VTC)

*** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*
**** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Appearance



Dimensions



Unit : mm

Ordering Information

Model No.	Product Description
Nuvo-7250VTC	Intel® 9th/ 8th-Gen Core™ in-vehicle controller with 4x M12 PoE+ ports, ultracapacitor-based power backup module
Nuvo-7254VTC	Intel® 9th/ 8th-Gen Core™ in-vehicle controller with 4x RJ45 PoE+ ports, ultracapacitor-based power backup module
Nuvo-7258VTC	Intel® 9th/ 8th-Gen Core™ in-vehicle controller with 8x RJ45 PoE+ ports, ultracapacitor-based power backup module

Optional Accessories

Cbl-M12X8M-RJ45-CAT5e-500CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 500CM
Cbl-M12X8M-RJ45-CAT5e-1000CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 1000CM
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C.

Optional Cellular Module

NSIO-LTE-7455	Cat. 6 LTE embedded socket modem

Nuvo-7100VTC Series

Intel® 9th/ 8th-Gen Core™ i7/i5/i3 In-vehicle Controller with 4x or 8x PoE+ Ports, DIO, CAN bus and RAID

CE FC EN50121 E24

Key Features

- **Supports Intel® 9th/8th-Gen Core™ i7/i5/i3 LGA1151 socket-type CPU**
- **4x or 8x 802.3at Gigabit PoE+ ports via M12 or RJ45 connectors**
- **Onboard isolated CAN bus for in-vehicle communication**
- **4-CH isolated DI and 4-CH isolated DO**
- **2x SATA ports with one hot-swappable HDD tray, supporting RAID 0/ 1**
- **2x M.2 B key and 3x full-size mini-PCIe sockets**
- **8 to 35V wide-range DC input with built-in ignition power control**
- **E-Mark certified and EN 50155 EMC compliant**

Introduction

Nuvo-7100VTC is a rugged in-vehicle controller featuring purpose-built set and effortless connectivity. Powered by Intel® 9th/ 8th-Gen Core™ processors with up to 6-core/ 8-core and 64GB DDR4 memory, it provides significant performance increases over previous generations.

Nuvo-7100VTC provides flexibility to support a range of peripherals and connections. It has four or eight 802.3at PoE+ ports to supply 25W power to connected devices via M12 or RJ-45 connectors. Screw-lock mechanisms on GbE and USB 3.1 ports guarantee extreme rugged connectivity in shock/ vibration environments. Wireless connectivity is essential for modern day in-vehicle applications and you can simultaneously utilize two M.2 and three mini-PCIe sockets with corresponding 3G/ 4G, WIFI, GPS, and CAN module for this purpose. Additionally, Neousys provides an option of 4G cellular module certified to work with renowned US telecom company to minimize implementation time and cost.

On top of all that, Nuvo-7100VTC also features isolated CAN bus, isolated DIO, 8 to 35V wide-range DC input with ignition power control and is E-Mark certified and EN 50155 EMC compliant. The Nuvo-7100VTC is the perfect solution with extraordinary reliability for various in-vehicle applications.

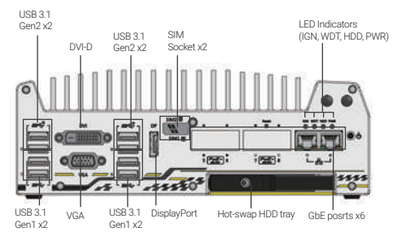
Specifications

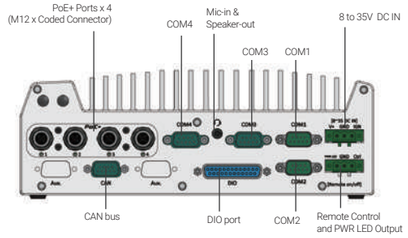
System Core	
Processor	Supporting Intel® 9th/ 8th-Gen Core™ CPU (LGA1151 socket, 35WTDP) - Intel® Core™ i7-9700TE/ i7-8700T - Intel® Core™ i5-9500TE/ i5-8500T - Intel® Core™ i3-9100TE/ i3-8100T
Chipset	Intel® Q370 platform controller hub
Graphics	Integrated Intel® HD Graphics 630
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	2x Gigabit Ethernet ports by Intel® I219 and I210
PoE+	4x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 - M12 x-coded connector (Nuvo-7100VTC); - RJ45 connector (Nuvo-7104VTC) 8x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 - RJ45 connector (Nuvo-7108VTC)
CAN	1x isolated CAN 2.0 port
Isolated DIO	4x isolated DI and 4x isolated DO
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
Video Port	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Audio	1x mic-in and 1x speaker-out
Storage Interface	
SATA HDD	1x hot-swappable HDD tray for 2.5" HDD/ SSD installation 1x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
mSATA	1x full-size mSATA port (mux with mini-PCIe)
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation

Expansion Bus	
Mini PCI-E	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA) 2x full-size mini-PCIe sockets (USB signals only) with internal SIM sockets
M.2	2x M.2 2242 B key socket, one with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input (IGN/ GND/ V+)
Remote Ctrl. & Status Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 84 mm (H)
Weight	3.5 kg
Mounting	Wall-mount with damping brackets (Standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	-40°C ~ 70°C */**
Storage Temperature	-40°C ~ 85°C
Humidity	10%~90% , non-condensing
Vibration	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Shock	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
EMC	E-Mark, EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035

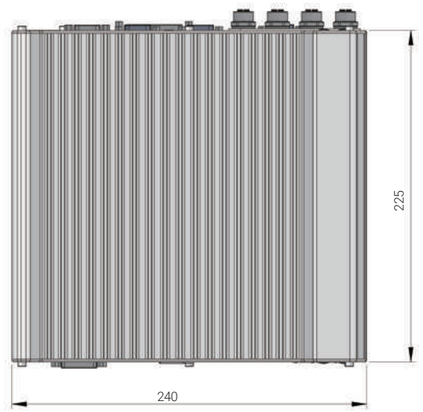
** For i7-9700E and i7-8700 running at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading applied. Users can configure CPU power in BIOS to obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Appearance

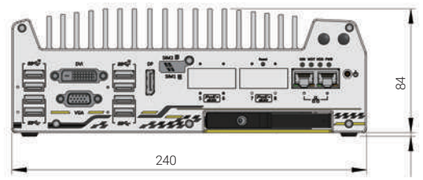




Dimensions



Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-7100VTC	Intel® 9th/ 8th-Gen Core™ in-vehicle controller with 4x M12 PoE+ Ports, DIO, CAN bus and RAID
Nuvo-7104VTC	Intel® 9th/ 8th-Gen Core™ in-vehicle controller with 4x RJ45 PoE+ Ports, DIO, CAN bus and RAID
Nuvo-7108VTC	Intel® 9th/ 8th-Gen Core™ in-vehicle controller with 8x RJ45 PoE+ Ports, DIO, CAN bus and RAID

Optional Accessories

Cbl-M12X8M-RJ45-CAT5e-500CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 500CM
Cbl-M12X8M-RJ45-CAT5e-1000CM	M12(8-pole-X-coded) to RJ45, CAT5e. Length : 1000CM
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C.

Optional Cellular Module

NSIO-LTE-7455	Cat. 6 LTE embedded socket modem

Nuvo-5100VTC Series

Intel® 6th-Gen Core™ i7/i5/i3 In-vehicle Controller with 4x or 8x PoE+ Ports, DIO, CAN bus and RAID

Key Features

- **Supports Intel® 6th-Gen Core™ i7/ i5/ i3 LGA1151 socket-type CPU**
- **4x or 8x 802.3at Gigabit PoE+ ports via M12 or RJ45 connectors**
- **On-board CAN bus for in-vehicle communication**
- **4-CH isolated DI and 4-CH isolated DO**
- **2x SATA ports with one hot-swappable HDD tray, supporting RAID 0/ 1**
- **4x full-size mini-PCIe sockets with SIM support**
- **8 to 35V wide-range DC input with built-in ignition power control**
- **E-Mark and EN 50155/ EN 45545 certificate**

CE FC E13 10R-0514321

Introduction

Nuvo-5100VTC is an in-vehicle controller in compliant with E-Mark and EN 50155/ EN 45545 certificate. Featuring Intel® 6th-Gen Core™ CPU, it exhibits superb CPU and GPU performance for various in-vehicle applications.

Nuvo-5100VTC offers four or eight 802.3at PoE+ ports to supply 25W power to the connected device. They are implemented using RJ45 or M12 (x-coded connectors), which guarantee extremely rugged connection in shock/ vibration environments. Two more Gigabit Ethernet ports by RJ45 are available for data communication. You can also utilize four internal mini-PCIe sockets with corresponding modules for 3G/ 4G/ WIFI/ GPS communication.

In addition, Nuvo-5100VTC integrates CAN bus for in-vehicle communication, and isolated DIO for sensor/ actuator control. Combing ignition power control and dual-drive RAID storage, Nuvo-5100VTC is the perfect solution for all your in-vehicle application needs.

Specifications

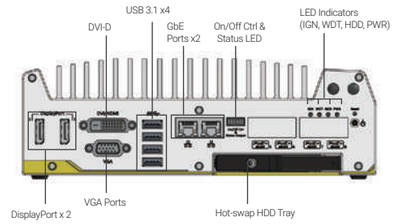
System Core	
Processor	Supports Intel® 6th-Gen Core™ i7/ i5/ i3 LGA1151 CPU - Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz, 35W TDP) - Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz, 35W TDP) - Intel® Core™ i3-6100TE (4M Cache, 2.7 GHz, 35W TDP)
Chipset	Intel® Q170 platform controller hub
Graphics	Integrated Intel® HD graphics 530
Memory	Up to 32 GB DDR4-2133 SDRAM (two SODIMM slots)
AMT	Supports AMT 11.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	2x Gigabit Ethernet ports by Intel® I219 and I210
PoE+	4x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 - M12 x-coded connector (Nuvo-5100VTC); - RJ45 connector (Nuvo-5104VTC) 8x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 - RJ45 connector (Nuvo-5108VTC)
CAN	1x CAN 2.0 port
Isolated DIO	4x isolated DI and 4x isolated DO
USB 3.1	4x USB 3.1 ports via native xHCI controller
USB 2.0	4x USB 2.0 ports
Video Port	1x stacked VGA + DVI-D 2x DisplayPorts, supporting 4K2K resolution
Serial Port	2x software-programmable RS-232/422/485 port (COM1 & COM3) 1x RS-232 port (COM2)
Audio	1x mic-in and 1x speaker-out
Storage Interface	
SATA HDD	1x hot-swappable HDD tray for 2.5” HDD/ SSD installation 1x Internal SATA port for 2.5” HDD/ SSD installation, supporting RAID 0/ 1

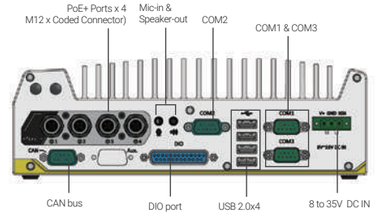
Storage Interface	
mSATA	1x full-size mSATA port (mux with mini-PCIe)
Expansion Bus	
Mini PCI-E	1x full-size mini-PCIe socket with panel-accessible SIM socket 1x full-size mini-PCIe socket with internal SIM socket (mux. with mSATA) 2x full-size mini-PCIe sockets (USB signals only) with internal SIM sockets
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V 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 79 mm (H)
Weight	3.3 kg
Mounting	Wall-mount with damping brackets (Standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	-40°C to 70°C */**
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Shock	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Certification	EN 50155/ EN45545 E-Mark (Nuvo-5108VTC) CE/ FCC Class A, according to EN 55022, EN 55024 & EN 55032

** For i7-6700 running 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 obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

Last updated: 15 - Jan 2020

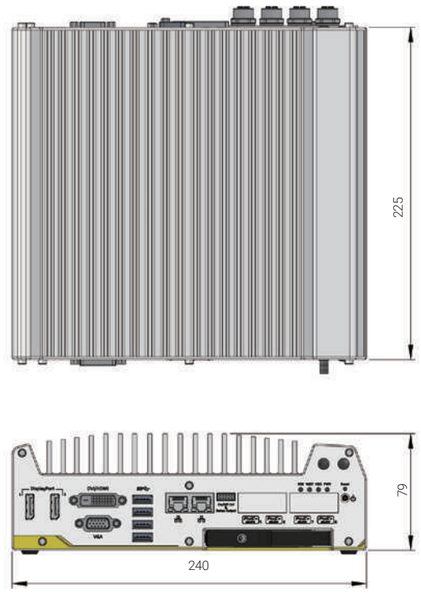
Appearance





Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-5100VTC	Intel® 6th-Gen Core™ in-vehicle controller with 4x M12 PoE+ Ports, DIO, CAN bus and RAID
Nuvo-5104VTC	Intel® 6th-Gen Core™ in-vehicle controller with 4x RJ45 PoE+ Ports, DIO, CAN bus and RAID
Nuvo-5108VTC	Intel® 6th-Gen Core™ in-vehicle controller with 8x RJ45 PoE+ Ports, DIO, CAN bus and RAID

Optional Accessories

Cbl-M12X8M-RJ45-500CM	M12 (8-pole-X-coded) to RJ45, CAT6, length : 500CM
Cbl-M12X8M-RJ45-1000CM	M12 (8-pole-X-coded) to RJ45, CAT6, length : 1000CM
DINRAIL-O	DIN-rail mount assembly for Nuvo-5100VTC series
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C.

Nuvo-2610VTC Series

Intel® Elkhart Lake Atom® x6425E In-Vehicle Computer with 4x M12 PoE+ ports and 15mm 2.5" HDD/SSD support

Key Features

- **Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/ 3.0GHz 12W processor**
- **Rugged -40°C to 70°C fanless operation, compliant with EN 50155 Class OT4**
- **4x PoE+ GbE ports via M12 x-coded connectors**
- **1x front-accessible 2.5" 15mm HDD tray and 1x M.2 2280 SATA SSD**
- **1x M.2 3042/3052 B Key for 4G/5G mobile broadband**
- **2x full-size mini-PCIe sockets for WIFI/CAN/GNSS modules**
- **8-35V wide-range DC input with built-in ignition power control**
- **E-Mark certified and EN 50155 EMC compliant**

Introduction

The Nuvo-2610VTC series is a rugged Intel® Atom®-based in-vehicle computer that incorporates four M12 Gigabit PoE+ connectors and one front-accessible 2.5" HDD tray, supporting up to 15mm height HDD/SSD. It is designed to fulfill multi-purpose applications such as on-road, off-highway, or railway applications from mobile gateways, data loggers, to network video recorders (NVR).

Powered by Intel® Elkhart Lake Atom® x6425E quad-core CPU, the Nuvo-2610VTC series delivers 1.8x the CPU performance when compared with the previous generation, Nuvo-2510VTC. To provide robust Ethernet connectivity, the Nuvo-2610VTC series offers four Gigabit PoE+ ports via M12 x-coded connectors and one USB 3.1 with the screw-lock mechanism. In addition to the internal M.2 2280 SATA SSD for system storage, Nuvo-2610VTC also has one front-accessible 2.5" HDD tray accommodating a 2.5" SATA HDD/SSD with up to 15mm height and 5TB capacity. For internal expansion, it provides two mini-PCIe sockets for WiFi, GNSS, and CAN modules plus one M.2 3042/3052 B Key socket for 4G/5G mobile broadband module.

To meet versatile in-vehicle deployment conditions, the Nuvo-2610VTC series comes in three variants. In addition to Nuvo-2610VTC, the Nuvo-2611VTC is equipped with an embedded SuperCAP UPS to withstand power interruptions or voltage fluctuations on the train and can sustain the system for a proper shutdown when the power is cut-off. The Nuvo-2612VTC has a Cassette module for an additional Gen3 x2 PCIe slot that can accommodate an AI accelerator module with a tailor-made thermal solution. With the AI accelerator, it becomes a fanless GPU computer for intelligent video analytics or a data logger with perception capability.

By integrating an Intel Atom® quad-core x6425E, -40°C to 70°C fanless operations, wide-range DC input with ignition control, and 4G LTE / 5G NR mobile broadband connectivity, the Nuvo-2610VTC series is an ideal rugged, multi-purpose, in-vehicle computer for aftermarket on-road in-vehicle applications. With rugged M12 PoE+ connectivity and built-in SuperCAP UPS, the Nuvo-2610VTC series can withstand harsh and unstable electrical environments for off-highway applications such as trucks, cargo vehicles, and rolling stock.

Specifications

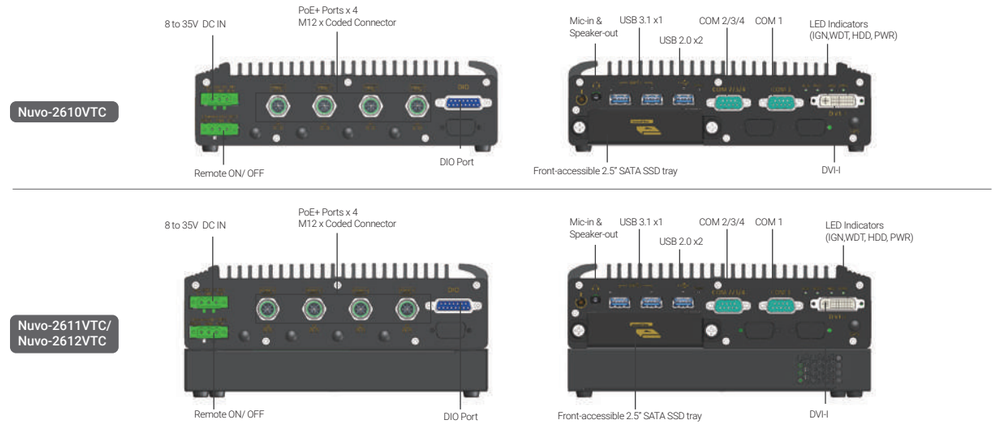
System Core	
Processor	Intel® Atom® x6425E quad-core 2.0GHz/3.0GHz 12W processor
Graphics	Integrated Intel® UHD Graphics
Memory	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports fTPM 2.0
Panel I/O Interface	
Ethernet Port	4x Gigabit Ethernet ports via M12 x-coded connectors by Intel® I210
PoE Capability	In compliant with IEEE 802.3at PoE+ PSE, maximum 25.5W output on single PoE+ port. Total PoE+ power budget: 100W
Video Port	VGA and DVI dual display outputs via DVI-I connector
USB 3.1	1x USB 3.1 gen1 ports with screw-lock
USB 2.0	2x USB 2.0 port with screw-lock
Serial Port	1x isolated RS-485 port with 15 kV ESD protection (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 (COM2)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Expansion Bus	
PCI Express	1x PCIe x4 slot @Gen3, 2-lane PCIe signal in Cassette (Nuvo-2612VTC only)
Mini-PCIe	1x full-size mini PCI Express socket with PCIe and USB 2.0 signal 1x full-size mini PCI Express socket with USB 2.0 signal
M.2 B key	1x M.2 3042/3052 B key (USB 3.1 + USB 2.0) for 4G/5G module with dual internal micro SIM socket
Storage Interface	
M.2 SATA	1x M.2 2280 M key (SATA interface only) socket for SATA SSD installation
SATA HDD	1x front-accessible HDD tray for 2.5" HDD/ SSD installation (up to 15mm height)

Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input with built-in ignition power control (IGN/GND/V+)
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Power Backup	
Capacity	2500 watt-second (Nuvo-2611VTC only)
Mechanical	
Dimension	205 mm (W) x 155 mm (D) x 58 mm (H) (Nuvo-2610VTC) 205 mm (W) x 155 mm (D) x 86 mm (H) (Nuvo-2611VTC, Nuvo-2612VTC)
Weight	1.9 kg (Nuvo-2610VTC) 2.5 kg (Nuvo-2611VTC) / 2.3 kg (Nuvo-2612VTC)
Mounting	Damping bracket (default) Wall-mount (optional)
Environmental	
Operating Temperature	-40°C to 70°C*
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.7, Category 4 IEC61373:2010, Category 1, Class B Body Mounted (part of EN50155)
Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I IEC61373:2010, Category 1, Class B Body Mounted (part of EN50155)
EMC	E-Mark**, EN 50121 (EN 50155 EMC) CE/FCC ClassA, according to EN 55032 & EN 55035

*For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.
** Nuvo-2610VTC and Nuvo-2612VTC are the only models in the Nuvo-2600VTC series that have been certified to comply with E-Mark.

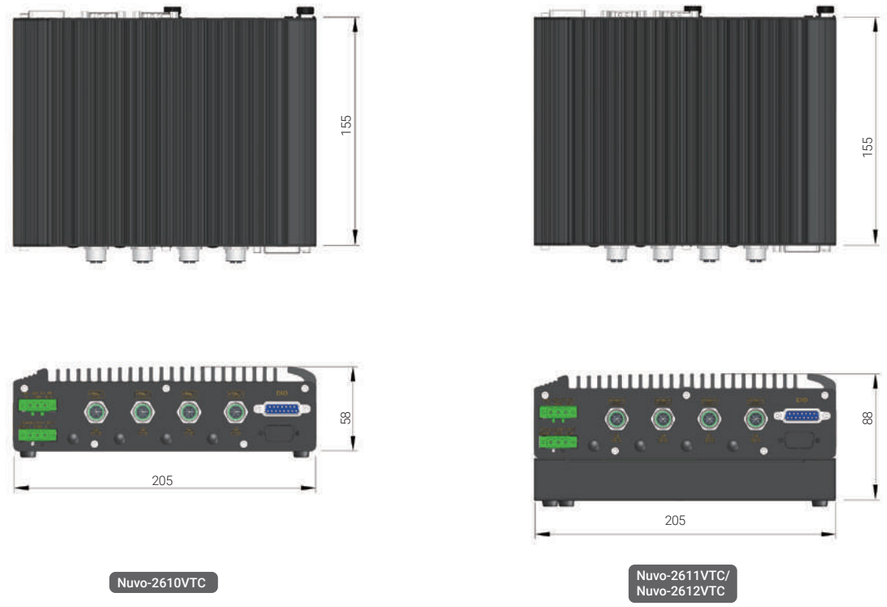
Last updated: 26 - Jun 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-2610VTC	Intel® Elkhart Lake Atom® x6425E in-vehicle fanless computer with M12 PoE+ and 15mm 2.5" HDD/SSD support
Nuvo-2611VTC	Intel® Elkhart Lake Atom® x6425E in-vehicle fanless computer with M12 PoE+, 15mm 2.5" HDD and built-in SuperCAP UPS
Nuvo-2612VTC	Intel® Elkhart Lake Atom® x6425E in-vehicle fanless computer with M12 PoE+, 15mm 2.5" HDD and single-slot PCIe Cassette

Optional Accessories

PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
Wmkit-Nuvo-2600	Wall mounting kit for Nuvo-2600 and Nuvo-2610VTC series, including wall mounting brackets and screws

POC-751VTC

Intel® Core™ i3-N305 Ultra-compact In-Vehicle Computer with 4x PoE+, HDMI™, SocketCAN, and mPCIe for WiFi/ 4G/ 5G Modules

Key Features

- **Intel® Alder Lake Core™ i3-N305 processor 15W with 8 E-Cores**
- **4x GbE PoE+ ports/ 4x USB3.2 Gen 2 with screw-lock**
- **DP++/ HDMI™ 1.4b dual display outputs**
- **2x isolated CAN 2.0 port, supporting SocketCAN in Linux**
- **2x mPCIe for WiFi/ 4G/ 5G module with conduction-cooled heatsink**
- **8-CH isolated DI & 8-CH isolated DO**
- **8V - 35V DC input with built-in ignition power control**
- **E-Mark certified and EN 50155 EMC compliant**

Introduction

POC-751VTC is Neousys' next-generation ultra-compact in-vehicle computer with E-Mark certification for in-vehicle applications such as a mobile gateway, mobile surveillance, and passenger information system.

POC-751VTC utilizes the latest Intel® Alder Lake i3-N305 with eight CPU cores and supports up to 16GB of DDR5-4800 memory, capable of delivering up to 1.5x the CPU performance when compared to previous POC-551VTC. And with Intel's UHD Graphics supporting Open Visual Inference and Neural network Optimization (OpenVINO), users can execute deep learning and inference models for light AI applications.

The system offers four 802.3at PoE+ ports to supply 25W power to compatible connected devices such as IP cameras. Internal expansion wise, the system features two heatsink cooled mini-PCIe slots for wireless communication module installation which is essential for future intelligent vehicle applications. There are also two isolated CAN 2.0 ports that support SocketCAN in Linux for in-vehicle communications, and isolated digital I/Os for sensor and actuator control. Power input wise, it accepts wide range 8V to 35V DC input with built-in ignition power control to suit a variety of vehicle deployments.

With the combination of ignition power control, wide-range DC input, rich I/Os, and edge AI capabilities, POC-751VTC is the perfect ultra-compact solution for modern intelligent in-vehicle applications.

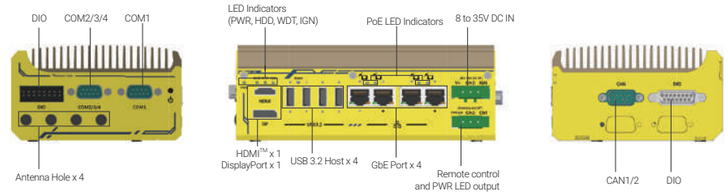
Specifications

System Core	
Processor	Intel® Alder Lake Core™ i3-N305 processor (8C/8T, 1.8/3.8 GHz, 15W TDP)
Graphics	Integrated Intel® UHD Graphics with 32EUs
Memory	Up to 16 GB DDR5-4800 SDRAM (one SODIMM socket)
TPM	Supports dTPM 2.0
I/O Interface	
Ethernet port	4x Gb Ethernet ports by Intel® I350-AM4
PoE+	4x IEEE 802.3at Gigabit PoE+ ports via RJ45 connector
USB	4x USB 3.2 Gen2 ports with screw-lock
CAN Bus	2x isolated CAN 2.0 port, supporting SocketCAN in Linux
Isolated DIO	4x isolated DI and 4x isolated DO (on MB) 4x isolated DI and 4x isolated DO (on MezIO)
Video Port	1x DP++, supporting 4096 x 2160 @ 60Hz 1x HDMI™ 1.4b, supporting 3840 x 2160 @ 30Hz
Serial Port	1x software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)
Storage Interface	
M.2	1x M.2 2280 M key socket for SATA SSD storage
Expansion Bus	
Mini-PCIe	2x full-size mPCIe for WiFi/ 4G/ 5G module with conduction-cooled heatsink

Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input (IGN/GND/V+)
Ignition Control	Built-in ignition power control
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	176mm (W) x 116mm (D) x 64mm (H)
Weight	1.7kg
Mounting	Horizontal-type wall-mount (Standard) Vertical-type wall-mount (Optional)
Environmental	
Operating Temperature	-40°C to 70°C
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
Shock	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
EMC	E-Mark, EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035

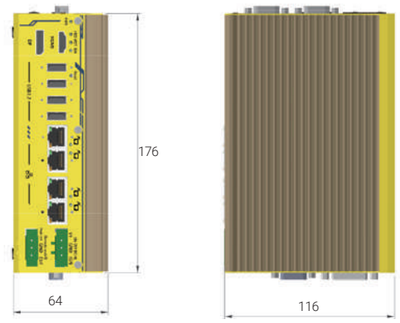
** For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-751VTC	Intel® Core™ i3-N305 Ultra-compact In-vehicle Computer with 4x PoE+, HDMI™, SocketCAN, and mPCIe for WiFi/ 4G/ 5G Modules

Optional Accessories

PA-60W-OW	60W AC/ DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. Operating temperature: -30°C to 70°C
PA-120W-OW	120W AC/ DC power adapter with 12V, 10A DC output, cord end terminals for terminal block. Operating temperature: -30°C to 60°C
Cbl-DB9F-3DB9M-15CM	DB9 (Female) to 3x DB9 (Male), length: 15CM for COM2/3/4
Cbl-DB9F-2DB9M-15CM	DB9 (Female) to 2x DB9 (Male), Length:15CM for CAN1/2
mPCIe-M2B	NGFF M.2 key B to mini-PCIe adapter with dual nano-SIM slots
mPCIe-M2E	NGFF M.2 key E to mini-PCIe adapter
mPCIe-M2M	NGFF M.2 key M to mini-PCIe adapter
Wmkit-V-POC500	Wall-mount assembly for POC-500 and POC-700 series, vertical type
AccsyBx-FAN-POC-700	Fan assembly for POC-700 series, 80x80x15 mm

POC-551VTC

AMD Ryzen™ V1000 Ultra-compact In-vehicle Controller with PoE+, DIO and Isolated CAN bus

Key Features

- **AMD Ryzen™ embedded V1000 series quad-core 15W CPU**
- **-40°C to 70°C rugged wide temperature fanless operation**
- **Four IEEE 802.3at PoE+ ports with screw-lock**
- **One isolated CAN bus port for in-vehicle communication**
- **One M.2 socket and three mPCIe sockets**
- **M.2 2280 M key NVMe (Gen3 x2) socket for fast storage access**
- **4-CH isolated DI and 4-CH isolated DO**
- **8 to 35V DC input with built-in ignition power control**
- **E-Mark and EN 50155/ EN 45545 certificate**

CE FC E13 10R-0615611

Introduction

POC-551VTC is the next generation ultra-compact, fanless in-vehicle controller offering performances never-seen-before in this form factor. Featuring AMD Ryzen™ Embedded V1000 4-core/ 8-thread processor, POC-551VTC delivers up to 3x times the CPU performance compared to previous generation, POC-351VTC. It combines finesse performance, extraordinary reliability and affordability for versatile in-vehicle applications.

POC-551VTC offers four 802.3at PoE+ ports to supply 25W power to device such as IP cameras. As wireless connectivity is essential for modern in-vehicle application, POC-551VTC with built-in one M.2 and three mini-PCIe are more applicable for in-vehicle use nowadays. It also integrates CAN bus for in-vehicle communication, and isolated DIO for sensor/ actuator control.

Combining ignition power control and wide-range DC input along with superior performance, POC-551VTC is the perfect solution for all your in-vehicle application needs in an extremely compact size!

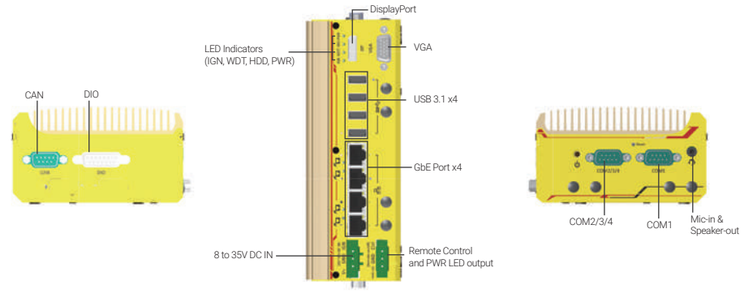
Specifications

System Core	
Processor	AMD Ryzen™ V1605B CPU (4C/ 8T, 2M Cache, 2.0/ 3.6 GHz, 12W - 25W TDP)
Graphics	Vega GPU with 6 compute units
Memory	Up to 16 GB DDR4-2400 SDRAM by one SODIMM sockets
TPM	Supports TPM 2.0
Panel I/O Interface	
Ethernet port	4x Gigabit Ethernet ports by Intel® I350-AM4 controller
PoE+	4xIEEE 802.3at Gigabit PoE+ ports by Intel® I350-AM4
CAN	1x CAN 2.0 port
Isolated DIO	4x Isolated DI and 4x Isolated DO
USB 3.1	4x USB 3.1 Gen1 ports with screw-lock
Video Port	1x VGA, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2160 resolution
Serial Port	1x software-programmable RS-232/ 422/ 485 ports (COM1) 3x 3-wire RS-232 ports (COM2/ 3/ 4) or 1x RS-422/ 485 port (COM2)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
M.2	1x M.2 2280 M key NVMe socket (PCIe Gen3/ x2) installation
mSATA	1x full-size mSATA port
Expansion Bus	
Mini PCIe	3x full-size mini PCI Express socket with internal SIM socket
M.2	1x M.2 2242 B key socket for 3G/ 4G option with USIM support

Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input with built-in ignition power control (IGN/GND/V+)
Remote Ctrl.&LED Output	1x3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	64 mm (W) x 116 mm (D) x 176 mm (H)
Weight	1.3 kg
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	-40°C to 70°C*/**/***
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
Shock	IEC61373:2010, Category 1, Class B Body mounted (part of EN50155)
EMC	EN 50155, EN45545, E-Mark for in-vehicle applications CE/FCC Class A, according to EN 55032 & EN 55024

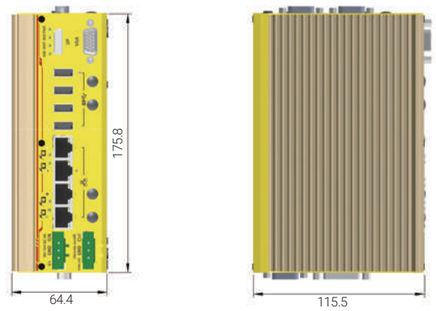
** For wide temperature use condition, a wide temperature/industrial mSATA module is required.*
*** For full function use condition (mini-PCIe, M.2, and mSATA are all adopted), the recommended operating temperature is -25°C to 60°C*
**** For extreme wide temperature -40°C to 70°C, it is optional with 100% screening, please contact Neousys Technology*

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-551VTC	AMD Ryzen™ V1605B ultra-compact In-vehicle controller with PoE+, DIO and isolated CAN bus

Optional Accessories

PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C.
PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. operating temperature : -30 to 60 °C.

Optional Cellular Module

NSIO-LTE-7455	Cat. 6 LTE embedded socket modem

POC-451VTC Series

Intel® Elkhart Lake Atom® x6425E Ultra-compact In-vehicle Computer with 3x 2.5G, PoE+ and M.2/mPCIe for WIFI/4G/5G Modules

CE FC E13 10R06/02*16529*00

Key Features

- **Intel® Atom® x6425E quad-core processor**
- **Rugged -25°C to 70°C fanless operation**
- **2x 2.5GbE PoE+ ports and 1x 2.5GbE port**
- **1x M.2 2242/ 3052 B key for 4G/5G module**
- **2x M.2 2230 E key for WIFI and edge TPU module**
- **Conduction-cooled heatsink for M.2/ mPCIe modules**
- **Dual M.2 2280 M key for SATA SSD**
- **8 to 35V DC input with built-in ignition power control**

Introduction

POC-451VTC is an ultra-compact in-vehicle computer with E-Mark certificate for in-vehicle applications, such as mobile gateway, mobile surveillance and passenger information system. It leverages the latest Intel® Elkhart Lake Atom® x6425E CPU, delivering 1.8x and 2x performance improvement for the CPU and GPU respectively, compared to the previous generation, POC-351VTC.

POC-451VTC provides multiple M.2 and mPCIe slots for installation of 4G/5G, WIFI5/6, CAN bus and edge TPU module for modern in-vehicle applications. It can therefore extend WIFI and broadband wireless communication as well as AI inference functionality inside a compact footprint. More than that, POC-451VTC introduces a dedicated conduction-cooled heat spreader to bring out and dissipate heat generated by M.2/mPCIe modules to maintains optimal system performance at high temperature environment.

POC-451VTC further offers three 2.5GBASE-T Ethernet ports with PoE+ capability for powering PoE PD devices, such as IP camera and GigE camera. They are backward-compatible with 1000/100 Mbps Ethernet to work with most existing Ethernet devices. It also provides isolated DIO for sensor/ actuator control and 8V-35V wide range DC input with ignition power control for in-vehicle deployment.

Combining significant performance boost, 2.5G PoE+ ports, superior thermal reliability for communication and inference, POC-451VTC is a AI-capable, mobile gateway solution to explore more possibility of versatile in-vehicle applications.

Specifications

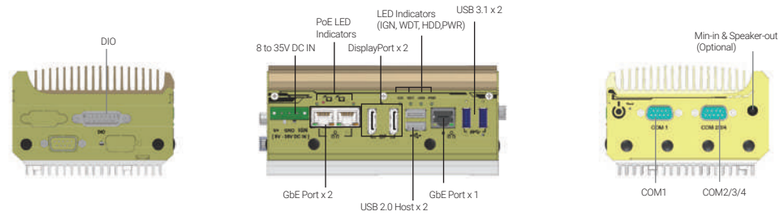
System Core	
Processor	Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/3.0GHz 12W processor
Graphics	Integrated Intel® UHD Graphics
Memory	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports fTPM 2.0
Panel I/O Interface	
Ethernet	3x 2.5GBASE-T Ethernet ports by Intel® I225 GbE controllers
PoE	IEEE 802.3at PoE+ on port #2 and #3
Video Port	2x DisplayPort connector, supporting 4096 x 2160 resolution @ 60Hz
USB 3.1	2x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	2x USB 2.0 ports
Serial Port	1x software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)
Audio	Optional 1x 3.5 mm jack for mic-in and speaker-out
Isolated DIO	4x isolated DI and 4x isolated DO
Internal Expansion Bus	
M.2 E key	2x M.2 2230 E key socket for WiFi or Google edge TPU
M.2 B key	1x M.2 2242/ 3052 B key socket for 4G/5G module with dual SIM support
Mini-PCIe	1x full-size mini-PCIe socket (USB2 signal only)

Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input with built-in ignition power control (IGN/GND/V+)
Mechanical	
Dimension	153 mm (W) x 108 mm (D) x 72 mm (H)
Weight	1.4 kg
Mounting	Vertical-type wall-mount (standard) DIN-rail mount (optional)
Storage Interface	
M.2 M key	2x M.2 2280 M key sockets for SATA SSD
Environmental	
Operating Temperature	-40°C to 70°C*/**
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	E-Mark CE/FCC Class A, according to EN 55032 & EN 55035

** For wide temperature use condition, a wide temperature/industrial M.2 M key SATA SSD module is required.*
*** For full function use condition (mini-PCIe and M.2 are all adopted), the operating temperature may be constrained by mini-PCIe and M.2 modules.Please contact Neousys Technology.*

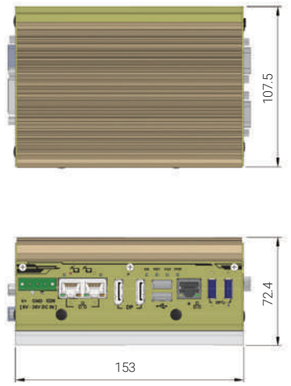
Last updated: 7 - Jul 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-451VTC	Intel® Elkhart Lake Atom® x6425E ultra-compact in-vehicle computer with 3x 2.5G, PoE+ and M.2/mPCIe for WIFI/4G/5G modules

Optional Accessories

PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. Operating temperature : -30 to 60 °C
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C
Cbl-DB9F-3DB9M-15CM	1x DB9 (Female) to 3x DB9 (Male), length: 15CM

POC-351VTC Series

Intel® Apollo Lake Atom™ E3950 Ultra-compact In-vehicle Controller with GbE, PoE+ and Isolated CAN bus

CE FC E13 10R-0514746

Key Features

- **Intel® Apollo Lake Atom™ E3950 quad-core processor**
- **Rugged, -25 °C to 70 °C fanless operation**
- **Two IEEE 802.3at PoE+ ports and one GbE port**
- **One isolated CAN bus port for in-vehicle communication**
- **One M.2 socket and three mPCIe sockets**
- **Aluminum heat-spreader for M.2/ mPCIe modules**
- **4-CH isolated DI and 4-CH isolated DO**
- **8 to 35V DC input with built-in ignition power control**

Introduction

POC-351VTC is an ultra-compact, fanless in-vehicle controller powered by Intel® Apollo Lake Atom™ E3950 quad-core processor. It combines finesse performance, extraordinary reliability and affordability for versatile in-vehicle applications.

POC-351VTC offers two PoE+ ports to power devices such as IP cameras, and one additional GbE port for data communication. It also features isolated CAN bus 2.0 port and RS-232/ 422/ 485 ports for communicating with other automotive devices. Wide-range DC input and ignition power control make POC-351VTC fit for various vehicle types.

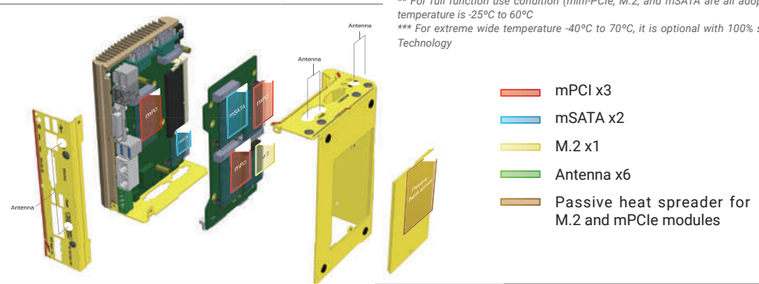
Wireless and internet access is essential for modern day in-vehicle applications and POC-351VTC has a total of four M.2/ mPCIe sockets and six antenna holes to accommodate a variety of 4G, 3G, WIFI and GPS modules. An aluminum heat-spreader is thoughtfully designed to dissipate the heat generated by modules to maintain superior operating stability, for the system and communication modules.

Specifications

System Core	
Processor	Intel® Atom™ E3950 1.6/ 2.0 GHz quad-core processor
Graphics	Integrated Intel® HD graphics 505
Memory	Up to 8GB DDR3L-1866 (single SODIMM slot)
Panel I/O Interface	
Ethernet	3x Gigabit Ethernet ports by Intel® I210 GbE controller
PoE	IEEE 802.3at PoE+ on port #2 and #3
Video Port	VGA and DVI dual display outputs via DVI-I
USB 3.1	2x USB 3.1 ports
USB 2.0	2x USB 2.0 ports
Serial Port	· 1x software-programmable RS-232/ 422/ 485 ports (COM1) · 3x 3-wire RS-232 ports (COM2/ COM3/ COM4) or 1x RS-422/485 port (COM2)
Audio	1x mic-in and 1x speaker-out
CAN bus	1x isolated CAN 2.0 port
Isolated DIO	4x isolated DI and 4x isolated DO
Internal I/O Interface	
M.2	1x M.2 B key socket for 3G/ 4G option with USIM support
Mini-PCIe	3x full-size mini PCI Express sockets with USIM support
Storage Interface	
mSATA	1x half-size mSATA port 1x full-size mSATA port

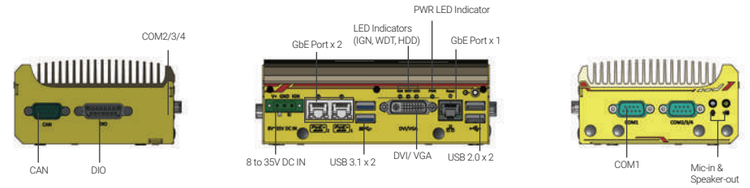
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input with built-in ignition power control (IGN/GND/V+)
Input Connector	3-pin pluggable terminal block for DC input (IGN/ GND/ V+)
Mechanical	
Dimension	153 mm (W) x 108 mm (D) x 56 mm (H) (POC-351VTC) 153 mm (W) x 108 mm (D) x 68 mm (H) (POC-351VTC-70)
Weight	1.0 kg (POC-351VTC) 1.1 kg (POC-351VTC-70)
Mounting	Horizontal Wall-mount (standard) or Vertical Wall-mount (optional)
Environmental	
Operating Temperature	-25°C to 70°C */** -40°C to 70°C (optional) */***
Storage Temperature	-40°C to 85°C**
Humidity	10% to 90% , non-condensing
Vibration	Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ mSATA, according to IEC60068-2-64)
Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ mSATA, according to IEC60068-2-27)
EMC	E-Mark for in-vehicle applications CE/ FCC Class A, according to EN 55032 & EN 55024

** For wide temperature use condition, a wide temperature/industrial mSATA module is required.*
*** For full function use condition (mini-PCIe, M.2, and mSATA are all adopted), the recommended operating temperature is -25°C to 60°C*
**** For extreme wide temperature -40°C to 70°C, it is optional with 100% screening, please contact Neousys Technology*



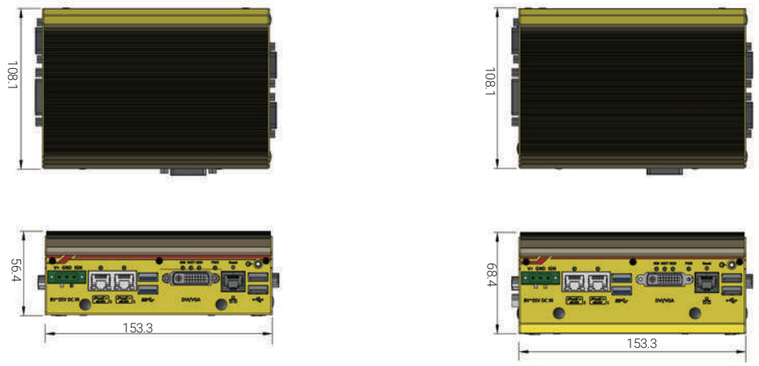
Last updated: 15 - Nov 2022

Appearance



Dimensions

Unit : mm



POC-351VTC **POC-351VTC-70**

Ordering Information

Model No.	Product Description
POC-351VTC	Intel® Apollo Lake Atom™ E3950 ultra-compact in-vehicle controller with 1x GbE, 2x PoE+ and isolated CAN
POC-351VTC-70	Intel® Apollo Lake Atom™ E3950 ultra-compact in-vehicle controller supporting optional LTE socket modem

Optional Accessories

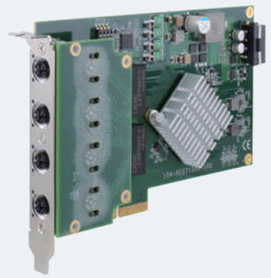
Wmkit-V-POC300	Wall-mount assembly for POC-351VTC, vertical type
PA-60W-OW	60W AC/DC power adapter with 12V, 5A DC output, cord end terminals for terminal block. operating temperature : -30 to 60 °C.

Optional Cellular Module

NSIO-LTE-7455	Cat. 6 LTE embedded socket modem

PCIe-PoE312M

4-port Server-grade Gigabit 802.3at PoE+ Card with M12 x-coded Connectors



Key Features

- **Intel® I350 server-grade Gigabit Ethernet controller**
- **Four M12 x-coded connectors with patent-pending housing design**
- **x4, Gen2 PCI Express interface offering 2GB/s total bandwidth**
- **Compliant with IEEE 802.3at to deliver up to 25.5 W per port**
- **Supports 9.5 kB jumbo frame, teaming and IEEE 1588**
- **Per-port PoE+ power on/off control**

**R.O.C Patent No. I711236*

Introduction

Introducing the world's first PCIe card with M12 x-coded connectors, it features Gigabit Ethernet and PoE+ functionalities. Thanks to Neousys' patent-pending housing design, PCIe-PoE312M's M12 connectors utilizes a CNC-milled aluminum block as its connector housing screw that can withstand more than extra stress on the cable/connector. It offers extremely rugged and reliable cable connection for Ethernet or PoE devices.

PCIe-PoE312M has four Gigabit Ethernet ports integrated via server-grade Intel® I350 NIC. It features checksum offloading, segmentation offloading and intelligent interrupt generation/moderation to increase overall Ethernet performance and reduce CPU utilization. It also integrates IEEE 802.3at PoE+ PSE function to deliver up to 25.5W to attached PD devices.

For fast-growing IoT, edge computing and rugged surveillance applications, reliable Ethernet connection is indispensable. Neousys' PCIe-PoE312M combines reinforced M12 connectors, PoE+ and Gigabit Ethernet to provide unparalleled connection ruggedness for most off-the-shelf computers.

Specifications

Bus Interface	x4, Gen2 PCI Express
Gigabit Ethernet Port	4x ports by Intel® I350-AM4 NIC supporting 9.5 kB jumbo frame, teaming and IEEE 1588
Port Connector	M12 x-coded connector with Neousys patent-pending housing
PoE Capability	In compliant with IEEE 802.3at-2009 (PoE+), each port delivers up to 25.5 W of power
Cable Requirement	CAT-5e or CAT-6 cable, 100 meters maximum
Power Requirement	Maximum 1.2 A @ 3.3 V from PCI Express bus Maximum 9.6 A @ 12 V from PCI Express bus or on-board 4-pin power connector
Operating Temperature	0°C to 55°C with air flow
Dimension	167 mm (L) x 111 mm (H) x 20 mm (W)*

**PCIe-PoE312M is wider than the standard PCIe card and may cause mechanical interference with the card next to it. It is recommended to leave the slot on the right empty. If you must install another card on the right, please proceed with caution!*

Ordering Information

Model No.	Product Description
PCIe-PoE312M	4-port server-grade Gigabit 802.3at PoE+ card with M12 x-coded connectors

Optional Accessories

Cbl-M12X8M-RJ45-500CM	M12 (8-pole-X-coded) to RJ45, CAT6, Length : 500CM
Cbl-M12X8M-RJ45-1000CM	M12 (8-pole-X-coded) to RJ45, CAT6, Length : 1000CM

Last updated: 24 - Nov 2020

Railway Computer

GT-92RL-H

EN50155 & EN45545 19" rack mount railway GPU computer including NVIDIA® RTX™ 2000 ADA, supporting Intel® 14th/ 13th / 12th-Gen Core™ processor, 43V to 160V DC input with isolation

Key Features

- **Compliant with EN 50155 mandatory tests and EN 45545-2**
- **Intel® 14th/ 13th/ 12th-Gen LGA1700 processor (35W/65W)**
- **Fanless GPU computer with NVIDIA® RTX™ 2000 ADA**
- **2U 19" chassis for rack-mount or wall-mount**
- **43V to 160V wide-range DC input via M12 K-Coded connector**
- **9x GbE ports via M12 X-Coded connectors**
- **1x M.2 2280 M key with PCIe-Gen 4x4 for NVMe storge**
- **2x full-size mPCIe sockets for MVB modules**
- **-40°C to 55°C wide-temperature fanless operation**

Introduction

GT-92RL-H is a 19" rack mount, wide-temperature, fanless GPU computer that delivers excellent CPU and GPU performance by leveraging Intel® 14th/ 13th/ 12th-Gen platform and NVIDIA® RTX™ 2000 ADA. Thanks to its high-performance and flexible camera expansion, GT-92RL-H is ideal for multi-camera applications requiring real time responses, e.g., pantograph and track gauge monitoring, video analytics in train carriages, track object identification, and tunnel inspection, etc.

GT-92RL-H has a proven thermal design to guarantee reliable system operation from -40°C to 55°C. It features a passive-cooling design for the system and 70W GPU card. Supporting eight GigE cameras (or IP cameras) and four USB3 cameras, GT-92RL-H is ideal for various vision-based AI applications on rolling stocks with its 110V DC input design and EN 50155/ EN 45545 certifications. It also provides flexible data storage options, including one M.2 2280 Gen4x4 NVMe providing up to 7000 MB/s extreme read/write speeds and two 2.5" SATA HDD/SSD to expand storage capacity.

With performance enhancements and comprehensive I/Os, GT-92RL-H is the perfect edge AI inference platform for rolling stock applications.

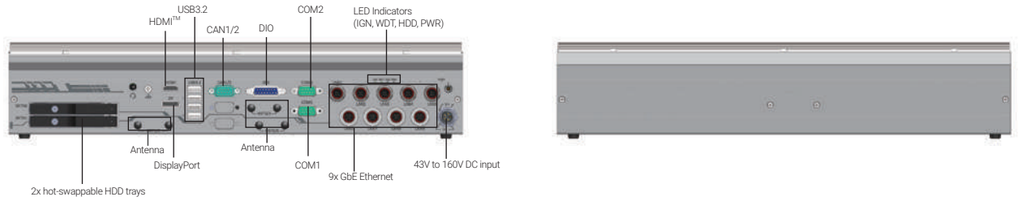
Specifications

System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	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® R680E platform controller hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU)	
Acceleration GPU	NVIDIA® RTX™ 2000 ADA	
Memory	Up to 64 GB ECC/ non-ECC DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	1x GbE Ethernet by Intel I219-LM via M12 x-coded connector(with WoL) 8x GbE Ethernet by Intel I350-AM4 via M12 x-coded connectors	
PoE+	None	
CAN Bus	2x isolated CAN 2.0 port, supporting SocketCAN in Linux	
USB	4x USB 3.2 Gen2x1 (10 Gbps) ports in type-A connectors	
Video Port	1x HDMI™ 1.4, supporting 4096×2160 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	2x isolated 3-wire RS232/ 422/ 485 port (COM1/ COM2)	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	
Audio	1x 3.5 mm jack for mic-in and speaker-out	

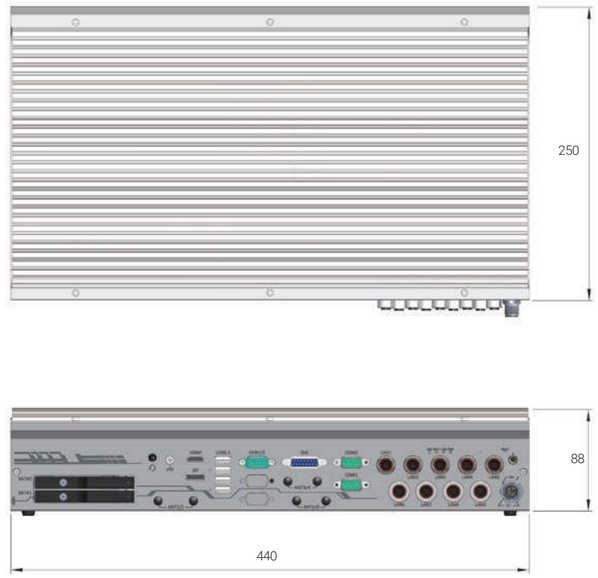
Storage Interface	
SATA HDD	2x hot-swappable HDD trays for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen4x4) for NVMe SSD
Internal Expansion Bus	
Mini PCI Express	2x full-size mini PCI Express socket with SIM slot
Power Supply	
DC Input	43V to 160V DC input (M12 K-coded)
Mechanical	
Dimension	440mm (W) x 250mm (D) x 88mm (H) (excl. rack-mount bracket)
Weight	8.0 kg
Mounting	Rack-mounting (optional) and wall-mounting (optional)
Environmental	
Operating Temperature	with 35W CPU -40°C to 55°C [1] with 65W CPU -40°C to 35°C [1]
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
Shock	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
EMC	EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035
EN 50155	All mandatory sections of EN 50155:2017 (110V)
EN 45545	EN 45545-2 (Fire protection on railway vehicles)

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

Appearance



Dimensions



Unit : mm

Ordering Information

Model No.	Product Description
GT-92RL-H	EN50155 & EN45545 19" rack mount railway GPU computer including NVIDIA® RTX™ 2000 ADA, supporting Intel® 14th/ 13th / 12th-Gen Core™ processor, 43V to 160V DC input with isolation

Optional Accessories

Cbl-M12K5F-CordEnd4-180CM	M12 K-Code Female 5P to Cord End Terminal 4P, Lenght:180cm
Cbl-M12X8M-RJ45-CAT6A-500CM	M12(8-pole-X-coded) to RJ45, CAT6A, Length: 500CM
Cbl-DB9F-2DB9M-15CM	DB9 (Female) to 2x DB9 (Male), Length: 15CM for CAN1/2
AccsyBx-SplicingConnector	Accessory box kits for Splicing Connector 2-Pole, included 10pcs
Rmkit-GT92	Rack-mount assembly for GT-92 series
Wmkit-GT92	Wall-mount assembly for GT-92 series
mPCIe-M2B	NGFF M.2 key B to mini-PCIe adapter with dual nano-SIM slots
mPCIe-M2E	NGFF M.2 key E to mini-PCIe adapter
mPCIe-M2M	NGFF M.2 key M to mini-PCIe adapter

Nuvo-2615RL Series

EN50155 & EN45545 Intel® Elkhart Lake Atom® x6425E Railway Computer Supporting 110 VDC Input and 4x M12 PoE+

Key Features

- **Compliant with EN 50155 mandatory tests and EN 45545-2**
- **Rugged -40°C to 70°C fanless operations, compliant with EN 50155 Class OT4**
- **43V to 160V wide-range DC input with 1500Vdc insulation**
- **Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/ 3.0GHz 12W processor**
- **4x PoE+ GbE ports via M12 x-coded connectors**
- **Built-in SuperCAP UPS for power interruptions > 30 seconds (Nuvo-2615RL only)**
- **1x front-accessible 2.5" 15mm HDD tray and 1x M.2 2280 SATA SSD**
- **2x full-size mini-PCIe sockets and 1x M.2 3042/3052 B Key**

Introduction

The Nuvo-2615RL series is an EN50155 and EN45545-compliant, fanless Intel® Atom®-based railway computer for video-based rolling stock applications such as NVR (network video recorder) and video analytics.

Nuvo-2615RL has a dedicated thermal design to meet EN50155 OT4 class (-40°C to 70°C) fanless operation with max CPU performance and up to 50W PoE+ delivery. To overcome the challenging railway conditions, from voltage fluctuations to power outage interruptions, Nuvo-2615RL is equipped with an isolated wide 43V to 160V DC input design and a built-in SuperCAP UPS to sustain more than 30 seconds of operation time without power supply. If power outage time exceed the sustainable duration, the internal microcontroller (MCU) will trigger a software shutdown before running out of SuperCAP energy to protect the hardware, data, and minimize maintenance costs.

Powered by Intel® Elkhart Lake Atom® x6425E quad-core CPU, the Nuvo-2615RL series delivers 1.8x the CPU performance compared with Intel's previous Atom generation, Apollo Lake. The Nuvo-2615RL series features 4x PoE+ GbE ports with up to 50W total power budget for IP camera connectivity. In addition to the internal M.2 2280 SATA SSD for system storage, Nuvo-2615RL has one front-accessible 2.5" HDD tray accommodating a 2.5" SATA HDD/SSD up to 15mm in height and 5TB in capacity. For internal expansion, it provides two mini-PCIe sockets for WiFi, GNSS, and CAN modules. There is also an M.2 3042/3052 B Key socket for 4G/5G mobile broadband modules.

Integrating an Intel Atom® quad-core x6425E, -40°C to 70°C fanless operations, M12 PoE+ connectivity, up to 5TB data storage capacity, 2500 watt-second SuperCAP UPS, 43V to 160V wide-range DC input, and EN50155 and EN45545 compliance, the Nuvo-2615RL series is the ideal rugged transportation computer for vision-based rolling stock applications.

Specifications

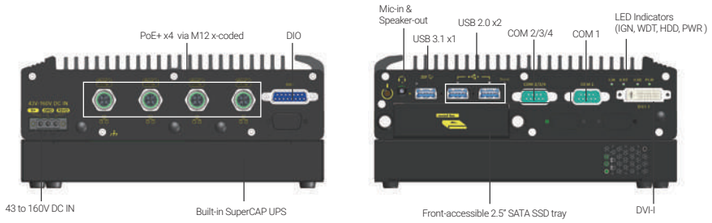
System Core	
Processor	Intel® Atom® x6425E quad-core 2.0GHz/3.0GHz 12W processor
Graphics	Integrated Intel® UHD Graphics
Memory	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports fTPM 2.0
Panel I/O Interface	
Ethernet Port	4x Gigabit Ethernet ports via M12 x-coded connectors by Intel® I210
PoE Capability	In compliant with IEEE 802.3at PoE+ PSE, maximum 25.5W output on single PoE+ port. Total PoE+ power budget: 50W
Video Port	VGA and DVI dual display outputs via DVI-I connector
USB 3.1	1x USB 3.1 gen1 ports with screw-lock
USB 2.0	2x USB 2.0 port with screw-lock
Serial Port	1x isolated RS-485 port with 15 kV ESD protection (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 (COM2)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Expansion Bus	
Mini-PCIe	1x full-size mini PCI Express socket with PCIe and USB 2.0 signal 1x full-size mini PCI Express socket with USB 2.0 signal
M.2 B key	1x M.2 3042/3052 B key (USB 3.1 + USB 2.0) for 4G/5G module with dual internal micro SIM socket
Storage Interface	
M.2 SATA	1x M.2 2280 M key (SATA interface only) socket for SATA SSD installation
SATA HDD	1x front-accessible HDD tray for 2.5" HDD/ SSD installation (up to 15mm height)

Power Supply	
DC Input	1x 3-pin pluggable terminal block for isolated 43V to 160V DC input
Power Backup	
Capacity	2500 watt-second (Nuvo-2615RL Only)
Mechanical	
Dimension	205 mm (W) x 155 mm (D) x 58 mm (H) (Nuvo-2610RL) 205 mm (W) x 156 mm (D) x 86 mm (H) (Nuvo-2615RL)
Weight	2.1kg (Nuvo-2610RL) 2.7kg (Nuvo-2615RL)
Mounting	Damping bracket (default) Wall-mount (optional)
Environmental	
Operating Temperature	-40°C to 70°C*, compliant with EN50155 Class OT4
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
Vibration	IEC61373:2010, Category 1, Class B Body Mounted (part of EN 50155)
Shock	IEC61373:2010, Category 1, Class B Body Mounted (part of EN 50155)
EMC	EN 50155:2017, Clause 13.4.8 CE/FCC Class A, according to EN 55032 & EN 55035
EN50155	All mandatory sections of EN 50155:2017 Nuvo-2610RL: EN50155 Class S1, EN50155 C1 Nuvo-2615RL: EN50155 Class S3, EN50155 C2
EN45545	EN 45545-2 (Fire protection on railway vehicles)

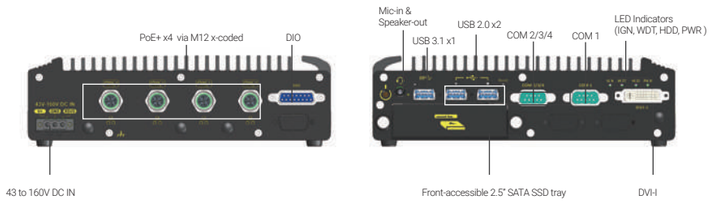
** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

Appearance

Nuvo-2615RL

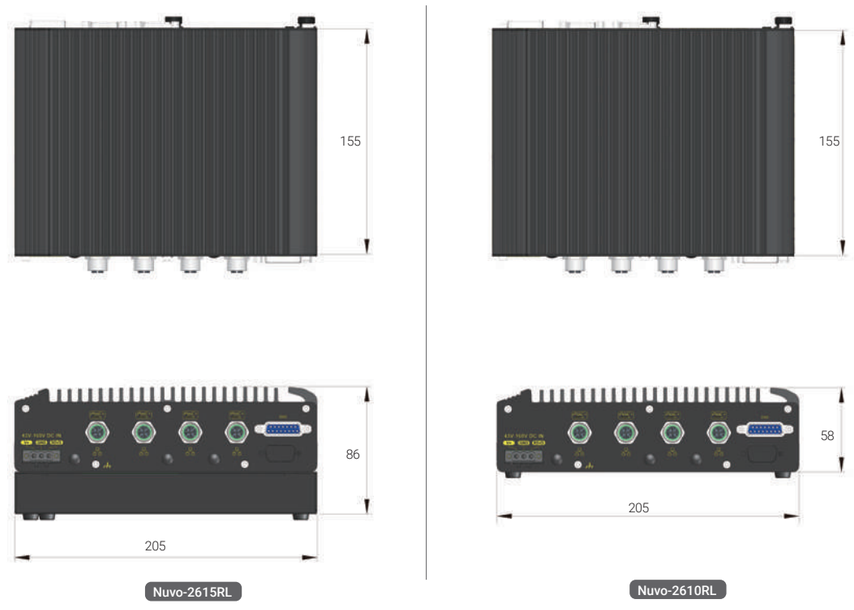


Nuvo-2610RL



Dimensions

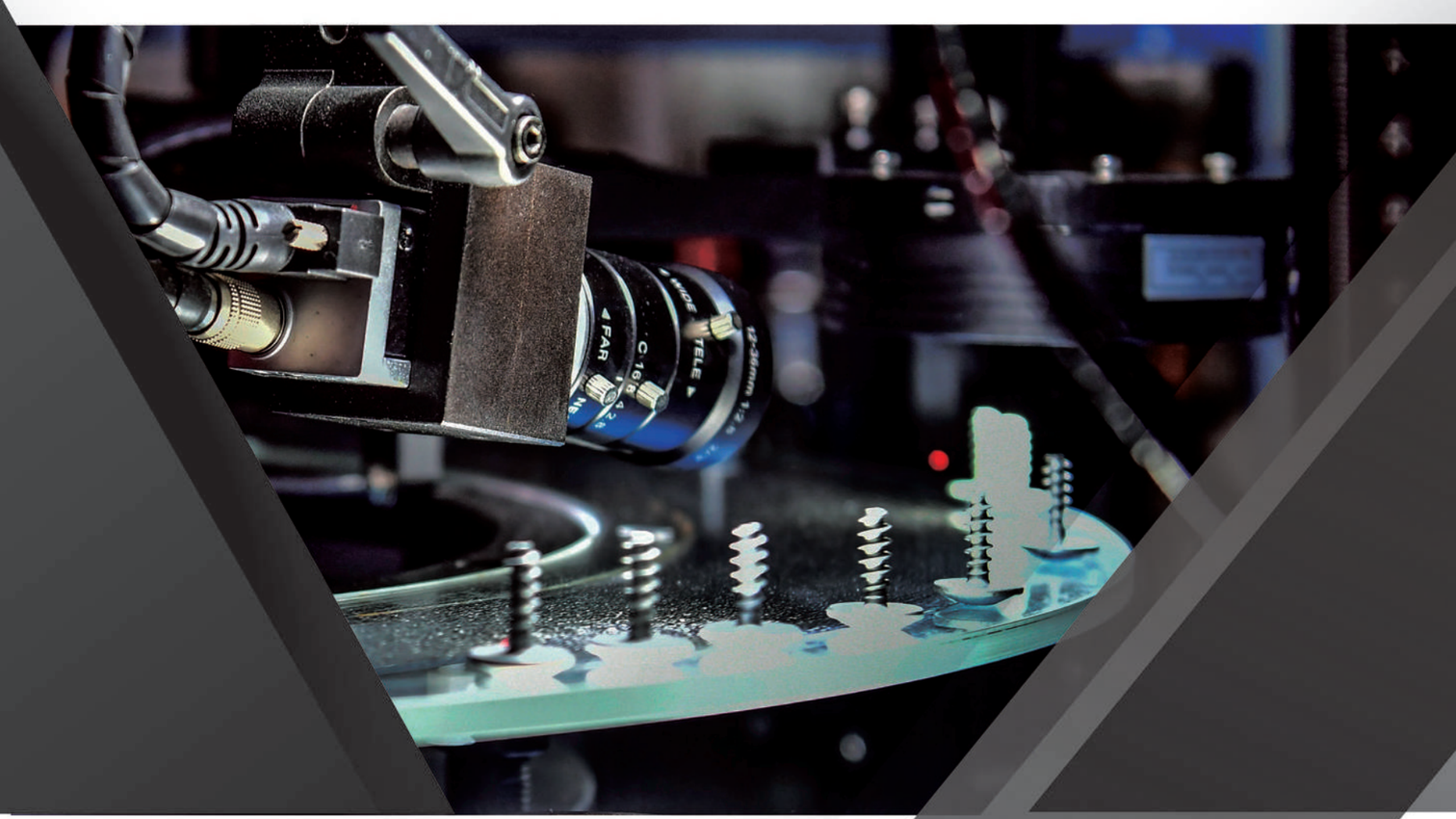
Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-2610RL-H	EN50155 & EN45545 Intel® Elkhart Lake Atom® x6425E Railway Fanless Computer with 4x M12 PoE+ and 43V to 160V ultra-wide-range DC input
Nuvo-2615RL-H	EN50155 & EN45545 Intel® Elkhart Lake Atom® x6425E Railway Fanless Computer with 4x M12 PoE+ , 43V to 160V ultra-wide-range DC input, and built-in SuperCAP UPS

Machine Vision



Nuvis-7306RT Series

Intel® 9th/ 8th-Gen Core™ i vision controller with vision-specific I/O, real-time controller and GPU-computing

CE FC

Key Features

- **Intel® 9th/ 8th-Gen Core™ i7/i5 LGA1151 socket-type CPU**
- **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 with screw-lock**
  - **8-CH USB 3.1 ports with screw-lock**
- **Two x16 PCIe slots for NVIDIA 120W GPU and/or image capture card**

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

Introduction

Nuvis-7306RT series is an all-in-one powerful vision controller incorporating every function needed for machine vision applications. Powered by Intel® 9th/ 8th-Gen Core™ i7/i5, Nuvis-7306RT brings tremendous computing power for image processing.

Nuvis-7306RT integrates constant-current lighting controller, isolated 12V camera trigger output, encoder input for position information and DIO to connect sensors/ actuators. Thanks to Neousys' patented MCU-based architecture and DTIO/ NuMCU firmware, Nuvis-7306RT is able to overcome latencies between sensor input and trigger output. It offers microsecond-scale real-time I/O control that guarantees in-time or in-position image capture.

For deep learning vision applications, Nuvis-7306RT can accommodate an NVIDIA® 120W TDP GPU to leverage state-of-the-art object detection/ classification neural network models. Built-in vision-oriented I/O along with remarkable performance makes Nuvis-7306RT the most exceptional vision controller that fits right into the modern vision industry.

Specifications

System Core	
Processor	Supporting Intel® 9th/ 8th-Gen Coffee Lake CPU (LGA1151 socket, 65W/ 35W TDP) - Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T - Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T
Chipset	Intel® Q370 platform controller hub
Graphics	Integrated Intel® UHD graphics 630
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
Vision-Specific I/O Interface	
LED Lighting Controller	4-CH LED lighting controller output, supporting - Constant current mode (up to 2A per channel, 100 kHz dimming control) - Constant voltage mode (24 VDC, 100 kHz dimming control)
Camera Trigger	4-CH camera trigger output (Isolated 12 VDC output)
Encoder Input	1-CH quadrature encoder input (A/B/Z)
Isolated Digital Output	4-CH isolated high-speed digital output (<2 us transient time, for strobe/PWM) 4-CH isolated high-current digital output (up to 500 mA rated current for actuator)
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
I/O Interface	
Ethernet	6x Gigabit Ethernet ports by I219 and I210
PoE+	4x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 with RJ45 connector
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	1x USB 2.0 port (internal use)
Video Port	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Audio	1x 3.5 mm jack for mic-in and speaker-out

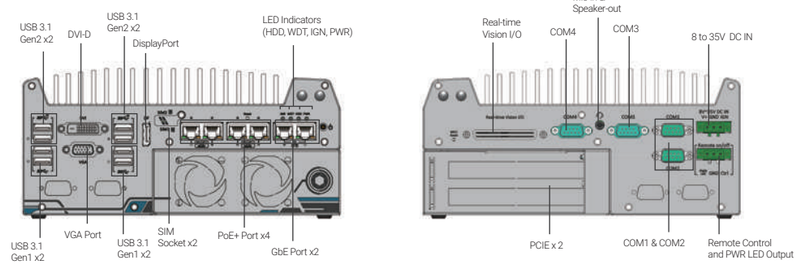
Storage Interface	
SATA HDD/ SSD	2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation
mSATA	1x full-size mSATA port (mux with mini-PCIe)
Expansion Bus	
PCI Express	2x PCIe x16 slot @ Gen3, 8-lane PCIe signals in Cassette, supporting - 120W NVIDIA® GPU card - COTS CameraLink and CoaXPress camera interface card
Mini PCI-E	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA)
M.2	1x M.2 2242 B key socket with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input
Remote Ctrl. & Status Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 111 mm (H)
Weight	3.7 kg
Mounting	Wall-mount
Environmental	
Operating Temperature	with 35W CPU and NVIDIA® 120W GPU -25°C to 60°C ** with 65W CPU and NVIDIA® 120W GPU -25°C to 60°C */ ** (configured as 35W TDP mode) -25°C to 50°C */ ** (configured as 65W TDP mode)
Storage Temperature	-40°C to 85°C**
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55024

** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*

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

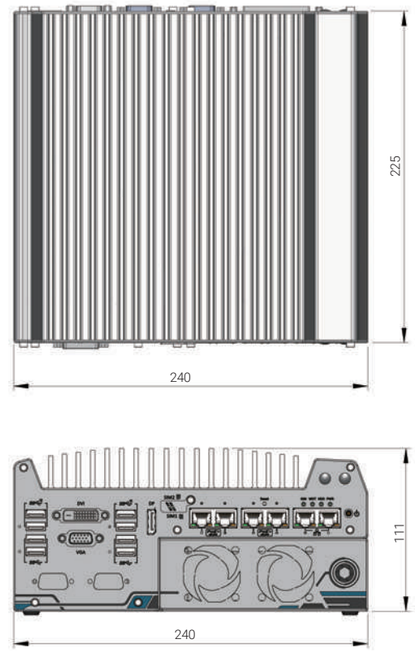
Last updated: 27 - Feb 2020

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvis-7306RT-DTIO	Intel® 9th/ 8th-Gen Core™ i machine vision controller with vision-specific I/O, real-time controller by patented DTIO V2 and GPU-computing
Nuvis-7306RT-NuMCU	Intel® 9th/ 8th-Gen Core™ i machine vision controller with vision-specific I/O, real-time controller by patented NuMCU and GPU-computing

Optional Accessories

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.
PA-480W-DIN	480W AC/ DC power adapter DIN-rail mount, 24V 20A, 90 to 264VAC/ 127 to 370VDC, terminal block, -20°C to70°C

Nuvis-534RT Series

AMD Ryzen™ V1000 Ultra-compact Vision Controller with Vision-specific I/O and real-time control

CE FC

Key Features

- **AMD Ryzen™ Embedded V1807B quad-core 45W CPU**
- **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**
  - **Four Gigabit PoE+ ports with screw-lock**
  - **Four USB 3.1 ports with screw-lock**
- **M.2 2280 M key NVMe (Gen3 x2) socket for fast storage access**

**R.O.C Patent No. I526834*

Introduction

Nuvis-534RT is a high-performance, ultra-compact vision controller with integrated camera interfaces, vision-specific I/Os and real-time control for machine vision applications. Powered by AMD Ryzen™ Embedded V1807B 4-core/ 8-thread processor, it provides superb performances equivalent to mainstream desktop CPUs while retaining a compact 8.2 cm x 11.8 cm x 17.6 cm (3.4″ x 4.6″ x 6.9″) dimensions.
Nuvis-534RT offers unique vision-oriented I/O configurations, including constant-current lighting controller to directly drive LED lights, isolated 12V trigger output to activate cameras, encoder input to acquire position information and DIO to connect to sensors/ actuators. All of the above vision-oriented I/Os can be managed by Neousys' patented DTIO V2 or NuMCU technology to guarantee real-time trigger/ response in micro-second scale.
The combination of high performance and small footprint gives Nuvis-534RT a distinctive 1-2 punch advantage where the vision system can be easily deployed with USB 3.1 and GigE cameras and without space restrictions.

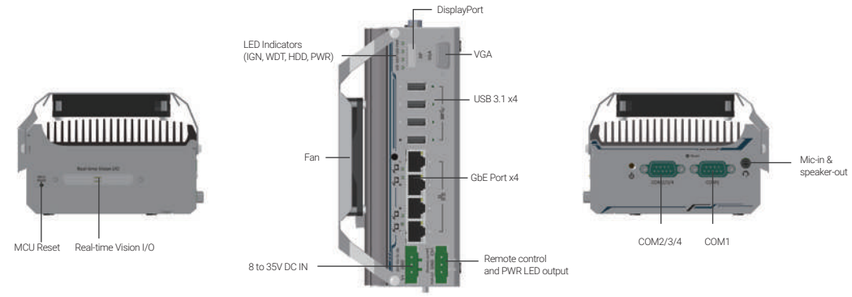
Specifications

System Core	
Processor	AMD Ryzen™ V1807B CPU (4C/ 8T, 2M Cache, 3.35/ 3.8 GHz,35W - 54W TDP)
Graphics	Vega GPU with 11 compute units
Memory	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports TPM 2.0
Vision-Specific I/O Interface	
LED Lighting Controller	4-CH LED lighting controller output , supporting - Constant current mode (up to 2 A per channel, 100 kHz dimming control) - Constant voltage mode (24 VDC, 100 kHz dimming control)
Camera Trigger	4-CH camera trigger output (isolated 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) 4-CH isolated high-current DO (up to 500 mA rated current for actuator)
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	4x Gigabit Ethernet ports by Intel® I350-AM4 controller
PoE+	IEEE 802.3at PoE+ PSE, 80 W total power budget
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports
Video Port	1x VGA , supporting 1920 x 1200 resolution 1x DP connector, supporting 4k2k resolution
Serial Port	1x Software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)
Audio	1x 3.5 mm jack for mic-in and speaker-out

Storage Interface	
M.2	1x M.2 2280 M key NVMe socket (PCIe Gen3 x2) for NVMe SSD
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input
Remote Ctrl. & Status Output	1x3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	82 mm (W) x 118 mm (D) x 176 mm (H)
Weight	1.5 kg
Mounting	DIN-rail mount (standard) or Wall-mount (optional)
Fan	External-accessible 80mm x 80mm fan for system heat dissipation
Environmental	
Operating Temperature	-25°C to 70°C */**
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55024

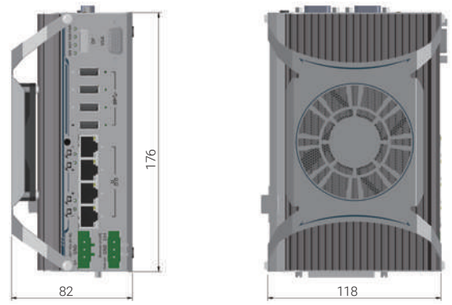
** For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*
*** Operating temperature is up to 70°C only if external-accessible fan is installed.*

Appearance



Dimensions

Unit : mm

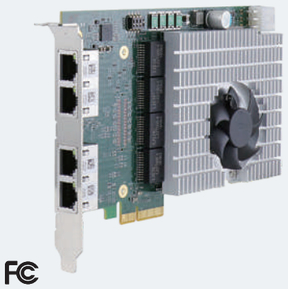


Ordering Information

Model No.	Product Description
Nuvis-534RT-DTIO	AMD Ryzen™ V1807B ultra-compact vision controller with vision-specific I/O and real-time control by DTIO
Nuvis-534RT-NuMCU	AMD Ryzen™ V1807B ultra-compact vision controller with vision-specific I/O and real-time control by NuMCU

PCIe-PoE454 Series

4-port 5GBASE-T Ethernet 802.3at PoE+ Frame Grabber Card



Key Features

- **4x IEEE 802.3bz 5GBASE-T Ethernet ports by four Marvel AQC111C controllers**
- **Compliant with IEEE 802.3at to deliver up to 25.5 W for each port**
- **Supports 5G/ 2.5G/ 1G/ 100M link speed**
- **x4, Gen3 PCI Express interface offering 4GB/s total bandwidth**
- **Per-port PoE+ power on/ off control**
- **Compatible with COTS NBASE-T industrial cameras**

Introduction

PCIe-PoE454at is an industrial-grade 4-port 5GBASE-T frame grabber card with 802.3at PoE+ capability for advanced machine vision applications. It leverages Marvel AQC111C 5GBASE-T Ethernet controller to offer dedicated 5 Gb/s Ethernet bandwidth for each port. Furthermore, it is backward compatible with 2.5G, 1G, 100M link speeds to support legacy Ethernet devices and can transmit data utilizing economical Cat 5e Ethernet cables up to 100 meters without bandwidth degradation.

5GBASE-T, or NBASE-T, is an emerging technology, especially for the machine vision market. Cameras with a 5GBASE-T Ethernet interface have up to 5 times the Ethernet bandwidth compared to Gigabit Ethernet, thus supporting higher resolution and frame rate. PCIe-PoE454at provides high port density to provide four 5GbE ports in a standard half-size PCIe card form factor. In addition, it comes with IEEE 802.3at PoE+ PSE function so you can simply power the NBASE-T camera using a single Ethernet cable.

For machine vision systems requiring multiple high-resolution 5GBASE-T cameras, PCIe-PoE454at is the ideal frame grabber that provides high port density, 24/7 reliable operation, and excellent throughput performance without frame loss.

Specifications

	PCIe-PoE454at	PCIe-N452
Bus Interface	4-lanes, Gen3 PCI Express interface, compliant with PCI Express Base Specification Revision 3.0	
# of 5G Port	4x 5GBASE-T Ethernet ports by four Marvel AQC111C 5G controllers, supporting 5G, 2.5G, 1G, 100M link speed	2x 5GBASE-T Ethernet ports by four Marvel AQC111C 5G controllers, supporting 5G, 2.5G, 1G, 100M link speed
PoE Capability	In compliance with IEEE 802.3at-2009 (PoE+), each port delivers up to 25.5 W of power	-
Ethernet Connector	4x RJ-45 connectors	2x RJ-45 connectors
Cable Requirement	CAT-5e or CAT-6 cable, 100 meters maximum	
Power Requirement	Maximum 5.5 A@12V (66W) from PCIe gold finger connector Maximum 8.5 A@12V (102W) with onboard 6-pin PCIe power connector connected	
EMC	CE Class A, according to EN 55032/55035 FCC Class A, according to FCC Part 15, Subpart B	
Operating Temperature	0°C to 55°C with airflow	
Dimension	167.7 mm (W) x 111.2 mm (H)	

Ordering Information

Model No.	Product Description
PCIe-PoE454at	4-port 5GBASE-T Ethernet 802.3at PoE+ Machine Vision Frame Grabber Card
PCIe-N452	2-port 5GBASE-T Ethernet Machine Vision Frame Grabber card

PCIe-PoE550X

2-port 10GbE Network Adapter with IEEE 802.3at PoE+

Key Features

- **Two 10 GbE ports by Intel® X550-AT2 10 GigE controller**
- **Gen3 PCI Express x4 interface**
- **Supports 10GbE with CAT-6/ 6a cable (Max. 100 meters)**
- **Supports 802.3at PoE+ with CAT 6a cable**
- **Supports NBASE-T and 1000BASE-T with CAT-5/ 5e cable**
- **Compliant with IEEE 802.3at to deliver 25.5W each port**
- **Supports 15.5 KB jumbo frame, NIC teaming and IEEE 1588**
- **Per-port PoE+ power on/off control via API**

Introduction

Introducing the world's first 10Gbit Ethernet NIC incorporating IEEE 802.3at PoE+ capability, featuring Intel® X550-AT2, Neousys Technology's PCIe-PoE550X offers cost-effective 10GBASE-T solution for growing 10GbE applications.

PCIe-PoE550X features 10GbE NIC incorporating Power over Ethernet (PoE+) capability. It features Neousys' proven 802.3at PoE+ technology and refined power design to ensure optimal signal integrity over 10G PHY and maximal bandwidth. The combination of 10GbE and PoE opens the door to new applications such as high-performance WiFi access points and high-speed/ high-definition industrial cameras over single Ethernet cable.

10GBASE-T leverages twisted-pair copper cable and RJ45 connector that dramatically reduces the deployment cost of 10G network. PCIe-PoE550X provides 10Gbit/s connections over a distance of up to 100 meters with CAT 6a cable or 55 meters with CAT 6 cable. It also supports upcoming NBASE-T standard as well as backward compatibility with existing 1000BASE-T GbE network so you can easily implement it into your current network infrastructure.

Specifications

Bus Interface	Gen3 PCI Express x4
# of 10 GbE Port	2x 10 GbE ports by Intel® X550-AT2 controller, supporting 15.5 KB jumbo frame, teaming and IEEE 1588
Network Protocol Support	IEEE 802.3 Ethernet interface for 10GBASE-T (IEEE 802.3an), NBASE-T (IEEE 802.3bz) and 1000BASE-T (IEEE 802.3ab)
PoE Capability	Optional IEEE 802.3at-2009 (PoE+), up to 25.5W per port
Cable Requirement	For 10GBASE-T: CAT 6a (100 meters) or CAT 6 (55 meters) For 5 Gbps NBASE-T: CAT 6 (100 meters) For 2.5 Gbps NBAST-T: CAT 5e (100 meters)
Power Requirement	Maximum 11.5W for 2x 10 GbE operation Maximum 51W for powering PoE+ devices
EMC	CE Class A, according to EN 55024/ 55032 FCC Class A, according to FCC Part 15, Subpart B
EMS	IEC 61000-4-x Class/ Level 3
Operating Temperature	0°C to 60°C with air flow
Dimension	168 mm (W) x 111.2 mm (H)

Ordering Information

Model No.	Product Description
PCIe-PoE550X	2-port 10GbE Network Adapter with IEEE 802.3at PoE+
PCIe-10G550X	2-port 10GbE Network Adapter

PCIe-PoE334LP

Low-profile 4-port Server-grade Gigabit PoE+ Card with 1 kV Surge Protection

Key Features

- **Low-profile form-factor**
- **4x ports via Intel® I350-AM4 server-grade GigE controller**
- **Compliant with IEEE 802.3at to deliver 25.5 W each port**
- **IEC 61000-4-5 Class 2 surge immunity**
- **Supports 9.5 kB jumbo frame, teaming and IEEE 1588**
- **Per-port PoE+ power on/ off control via software API**

Introduction

PCIe-PoE334LP is the latest member of Neousys' PoE NIC card family. It is the world's first PoE card to integrate 4-port server-grade GigE controller and 802.3at PoE+ into a low-profile PCIe card. The low-profile form-factor makes PCIe-PoE334LP the perfect solution for commercial off-the-shelf 2U server computers.

PCIe-PoE334LP is designed with Intel® I350-AM4 GigE controller to offer extraordinary Ethernet performance. It inherits Neousys' proven PoE technology to power your machine vision cameras and surveillance IP cameras. In addition, PCIe-PoE334LP features solid surge protection design compliant with IEC 61000-4-5 Class 2. It is capable of withstanding 1 kV surge and 8 kV ESD on signal lines. This is particularly valuable for outdoor surveillance system or factory automation equipment where power surge may damage the system through the Ethernet connection.

Incorporating low-profile form-factor and robust surge protection, PCIe-PoE334LP defines a new category of PoE card - a compact and yet solid PoE card for servers and rugged industrial applications.

Specifications

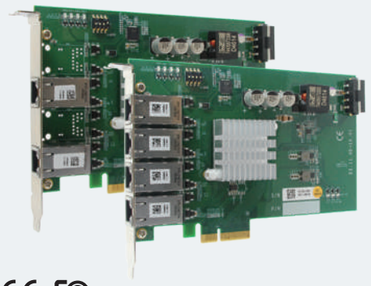
Bus Interface	x4, Gen2 PCI Express
Gigabit Ethernet Port	4x GigE ports by Intel® I350-AM4 controller, supporting 9.5 kB jumbo frame, teaming and IEEE 1588
PoE Capability	In compliance with IEEE 802.3at-2009 (PoE+), each port delivers up to 25.5 W of power 75W total power budget (limited by PCI Express bus)
Cable Requirement	CAT-5e or CAT-6 cable, 100 meters maximal
Power Requirement	Maximum 1.2 A @ 3.3 V from PCI Express bus Maximum 6.2A @ 12 V from PCI Express bus
EMC	CE Class A, according to EN 55022/ 55024/ 55032 FCC Class A, according to FCC Part 15, Subpart B
EMS	IEC 61000-4-x Class/ Level 2
Operating Temperature	0°C to 55°C with air flow
Dimension	168 mm (W) x 69 mm (H)

Ordering Information

Model No.	Product Description
PCIe-PoE334LP	Low-profile 4-port server-grade Gigabit 802.3at PoE+ card with 1 kV surge protection

PCIe-PoE354at/PoE352at

4-Port / 2-Port Server-grade Gigabit 802.3at PoE+ Frame Grabber Card



Key Features

- **x4, Gen2 PCI Express interface (2GB/s total bandwidth)**
- **Intel® I350 server-grade Gigabit Ethernet controller**
- **Supports four (354at) or two (352at) independent GigE ports**
- **Compliant with IEEE 802.3at to deliver 25.5 W each port**
- **Supports 9.5 kB jumbo frame, teaming and IEEE 1588**
- **Per-port PoE+ power on/ off control**

Introduction

PCIe-PoE354at is world's first PoE frame grabber card combining server-grade GigE controller and 802.3at PoE+ capability. Inheriting Neousys' expertise on PoE technology, PCIe-PoE354at further incorporates the updated 802.3at-2009 standard and offers up to 25.5W of power each port.

PCIe-PoE354at is designed with Intel® I350 Gigabit Ethernet controller. This server-grade GigE controller incorporates advanced features such as checksum offloading, segmentation offloading and intelligent interrupt generation/ moderation to increase overall Ethernet performance and reduce CPU utilization. In addition, its single-bus, multi-port topology minimizes compatibility issues with off-the-shelf motherboards when installing multiple cards.

Machine vision applications can be benefited by PCIe-PoE354at's server-grade network performance. Its 25.5W PoE+ can now power PTZ (pan-tilt-zoom) cameras for surveillance applications. With an excellent cost-per-performance ratio, PCIe-PoE354at is your ideal Power over Ethernet solution.

Specifications

	PCIe-PoE354at	PCIe-PoE352at
Bus Interface	x4, Gen2 PCI Express	
Gigabit Ethernet Port	4x GigE ports by Intel® I350-AM4 controller, supporting 9.5 kB jumbo frame, teaming and IEEE 1588	2x GigE ports by Intel® I350-AM2 controller, supporting 9.5 kB jumbo frame, teaming and IEEE 1588
PoE Capability	In compliant with IEEE 802.3at-2009 (PoE+), each port delivers up to 25.5 W of power	
Cable Requirement	CAT-5e or CAT-6 cable, 100 meters maximum	
Power Requirement	Maximum 1.2A @ 3.3V from PCI Express bus Maximum 5.5A @ 12V from PCI Express bus or on-board 4-pin power connector*	Maximum 0.9A @ 3.3V from PCI Express bus Maximum 4.8A @ 12V from PCI Express bus**
Operating Temperature	0°C to 55°C	
Dimension	168 mm (W) x 111 mm (H)	

** PCIe-PoE354at is designed to obtain 12 VDC for PoE devices from either PCI Express bus or on-board 4-pin power connector according to a user-configurable jumper.*
*** PCIe-PoE352at is designed to obtain 12 VDC for PoE devices directly from PCI Express bus. No external 12 VDC is needed.*

Ordering Information

Model No.	Product Description
PCIe-PoE354at	4-Port Intel® I350-AM4 server-grade Gigabit 802.3at PoE+ frame grabber card
PCIe-PoE352at	2-Port Intel® I350-AM2 server-grade Gigabit 802.3at PoE+ frame grabber card

PCIe-USB381F

8-Port USB 3.1 Gen1 Frame Grabber Card with 4x Independent USB Controllers

Key Features

- **x4 PCI Express® Gen2 interface (2GB/s total bandwidth)**
- **8x USB 3.1 Gen1 ports by 4x Fresco FL1100SX xHCI controllers**
- **Onboard 5VDC regulated power supply, no external power needed**
- **User-configurable 900mA and 1800mA current limit**
- **Software-programmable per-port power on/off control***
- **Supports Windows 7/10 operating systems**

CE FC

Introduction

Neousys PCIe-USB381F is an industrial-grade 8-port USB 3.1 Gen1 (formerly USB 3.0) frame grabber card for machine vision applications. Featuring x4 PCI Express Gen2 interface and four Fresco FL1100SX xHCI controllers, PCIe-USB381F can provide up to 400MB/s sustained data transfer rate per port with four USB3 cameras operating simultaneously, or provide a total bandwidth of 1600MB/s when eight cameras are plugged in.

All eight USB ports of PCIe-USB381F are accessible on the faceplate for easy cabling. Each port can deliver standard 900mA regulated 5V output to power USB3 cameras or user-configurable 1800mA output via onboard jumpers for devices that require higher power consumption. It also supports software-programmable per-port power on/off control to reset cameras or other devices for fault recovery.

The steady 400 MB/s data throughput satisfies the bandwidth requirement of most off-the-shelf industrial USB3 cameras. Pairing reliable 5 VDC power output and per-port on/off control, PCIe-USB381F can benefit a variety of vision-related applications such as machine vision, factory automation and medical imaging.

Specifications

USB Ports	8x USB 3.1 Gen1 ports, compatible with USB 2.0/ 1.1/ 1.0
USB Connectors	8x panel-accessible Type-A USB3 connectors
Bus Interface	4-lanes, Gen2 PCI Express interface, compliant with PCI Express Base Specification Revision 2.0
USB3 Host Controller	4x Fresco FL1100SX host controllers, compliant with Intel® xHCI Specification Revision 1.0
Per-Port Current Limit	User-configurable 900mA/ 1800mA per-port current limit
Power Requirement	Maximal 2.0 A@3.3V from PCI Express bus Maximal 5.5 A@12V from PCI Express bus for all connected USB devices
Operating Temperature	0 to 60°C with ambient airflow
Dimension	117.7 mm (W) x 111.2 mm (H)

Ordering Information

Model No.	Product Description
PCIe-USB381F	8-Port USB 3.1 Gen1 frame grabber card with 4x independent USB3 controllers

** Support software-programmable per-port power on/ off control for port 0/ 2/ 3/ 4/ 5/ 6/ 7*

PCIe-PoE572bt

Wide-temperature 2-port 10GBASE-T Network Adapter with IEEE 802.3bt PoE++ supporting RDMA (RoCEv2), -25°C to 70°C with airflow

Key Features

- **Two 10GBASE-T with RDMA over Converged Ethernet (RoCEv2) by Broadcom 57416 controller**
- **Compliant with IEEE 802.3bt PoE++ to deliver 90W each port (total 180W)**
- **Rugged, -25°C to 70°C operation**
- **Single-slot low-profile/ standard-height PCIe card form factor**
- **Gen3 x4 PCIe interface**
- **Per-port PoE++ power on/off control via API**
- **Supports 10GbE with CAT 6a cable (Max. 100 meters)**
- **Supports up to 9.6KB Jumbo frames**

CE FC

Introduction

The PCIe-PoE572bt is a rugged, wide-temperature dual-port 10G network adapter equipped with Remote Direct Memory Access (RDMA) and IEEE 802.3bt PoE++ support. Powered by the Broadcom® BCM57416 Ethernet controller, it supports jumbo frames up to 9.6 KB, making it ideal for applications such as RDMA-enabled cameras and outdoor Wi-Fi access points (APs).

As demand for 10 GigE industrial cameras grows in machine vision, traditional systems often suffer from high CPU usage due to packet handling and error checking. The PCIe-PoE572bt addresses this challenge with RDMA technology, reducing CPU usage by up to 90% compared to TCP/UDP protocols. RDMA enables direct, zero-copy data transfer to the host PC's memory, bypassing the CPU and operating system to free up computing resources for critical tasks like image processing algorithms.

The adapter also supports IEEE 802.3bt PoE++, providing up to 90W per port to power high-consumption PoE devices. Its -25 to 70°C wide operating temperature range ensures reliable performance in harsh environments, making it an excellent choice for powering PTZ cameras and outdoor Wi-Fi APs, which frequently require more than 30W and are exposed to outdoor conditions.

For enhanced flexibility, the PCIe-PoE572bt comes in a low-profile form factor, with a non-PoE version (PCIe-N572) available for applications not requiring PoE. As the first wide-temperature 10GbE RDMA frame grabber card with PoE++ support, the PCIe-PoE572bt delivers unparalleled performance and efficiency for machine vision, outdoor surveillance, and Wi-Fi infrastructure.

Specifications

	PCIe-PoE572bt	PCIe-N572
Bus Interface	x4, Gen3 PCI Express*	
# of 10 GbE Port	2x 10 GbE ports by Broadcom 57416 controller, supporting 9.6 KB jumbo frame	
Network Protocol Support	IEEE 802.3 Ethernet interface for 10GBASE-T (IEEE 802.3an) and 1000BASE-T (IEEE 802.3ab)	
Support Link Speed	Support 10G/ 1G / 100M/ 10M link speed	
PoE Capability	Compliant with IEEE 802.3bt PoE++ Type 3/Type 4 PSE, with a maximum output of 90W on a single port. Compatible with 802.3bt (PoE++), 802.3at (PoE+), and 802.3af (PoE) PD. Different configurable for PoE power budgets: Configuration A: 66W from PCIe connector Configuration B: 180W from 6-pin power connector	N/A
RDMA over Converge Ethernet	Support RoCEv2 *Throughput over 9.62 Gbps (verified through IB test)	
Cable Requirement	CAT 6a or better Ethernet cable (Max 100 meters)	
EMC	CE/FCC Class B, according to EN 55032 & EN 55035	
Operating Temperature*	-25°C to 70°C rugged operation with airflow	-25°C to 70°C fanless operation with airflow
Dimension	Low-Profile bracket: 167.65 mm (W) x 68.9 mm (H) Standard-Height bracket: 167.65 mm (W) x 111.2 mm (H)	

**Ensure 70°C ambient and 1.2 m/s airflow at the heatsink center to ensure 100% performance.*
**PCIe-PoE572bt/PCIe-N572 supports x8, x4, x1 PCIe lanes*

Ordering Information

Model No.	Product Description
PCIe-PoE572bt	Wide-temperature 2-port 10GBASE-T Network Adapter with IEEE 802.3bt PoE++ supporting RDMA (RoCEv2), -25°C to 70°C with airflow
PCIe-N572	Wide-temperature 2-port 10GBASE-T Network Adapter supporting RDMA (RoCEv2), -25°C to 70°C, fanless

Optional Accessories

AccsyBx-two port PCIe low profile bracket	Accessory bracket kits for PCIe-PoE572bt

Surveillance/ Video Analytics

Nuvo-5608VR Series

Intel® 6th-Gen Core™ i7/i5 Fanless Surveillance System with 8x PoE+, DIO, CAN bus and 2x 3.5" HDD Accommodation Supporting RAID 0/1

Key Features

- **Supports Intel® 6th-Gen Core™ i7/ i5/ i3 LGA1151 socket-type processor**
- **8x 802.3at PoE+ ports and 2x GbE ports**
- **2x 3.5" HDD accommodation, support RAID 0/1 with over 24 TB capacity**
- **Dedicated HDD heat-spreader for optimized thermal performance**
- **4x full-size mini-PCIe sockets with SIM support**
- **4-CH isolated DI and 4-CH isolated DO**
- **1x CAN 2.0 port**
- **8 to 35V wide-range DC input with built-in ignition power control**
- **Patented damping brackets* to withstand 1 Grms Vibration**

**R.O.C Patent No. M491752*

Introduction

Nuvo-5608VR is Neousys' latest fanless surveillance system designed for real-time video analysis and streaming. It incorporates 6th-Gen Core™ i CPU, IP camera connectivity and massive storage capacity for emerging intelligent surveillance/ security applications.

Featuring eight Gigabit PoE+ ports, Nuvo-5608VR provides sufficient bandwidth to collect high-definition video streams from IP cameras, while its 6th-Gen Core™ i7 CPU is capable of performing real-time video analytics. It accommodates two 3.5" hard drives with RAID 0/ 1 configuration to support more than 24 TB storage capacity for recording 8-CH, 1080p@H.264 video for over 3 months.

Neousys' patented damping-bracket is shipped with Nuvo-5608VR to protect the system against vibration in harsh environmental conditions.

Being a rugged surveillance platform, Nuvo-5608VR is equipped with dedicated HDD heat-spreaders to maintain adequate HDD operating temperature and along with extra features such as DIO, CAN bus and ignition control, Nuvo-5608VR is the perfect fit for both stationary and mobile surveillance applications.

Specifications

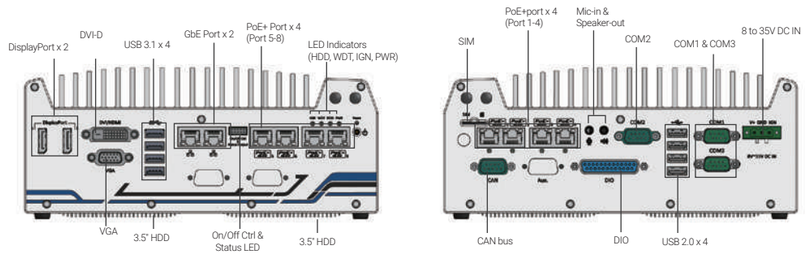
System Core	
Processor	Supports 6th-Gen Intel® Core™ i7/ i5/ i3 LGA1151 CPU Intel® Core™ i7-6700 (8M Cache,3.4/ 4.0 GHz, 65W TDP) Intel® Core™ i5-6500 (6M Cache, 3.2/ 3.6 GHz, 65W TDP) Intel® Core™ i3-6100 (3M Cache, 3.7 GHz, 51W TDP) Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz, 35W TDP) Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz, 35W TDP) Intel® Core™ i3-6100TE (4M Cache, 2.7 GHz, 35W TDP)
Chipset	Intel® Q170 platform controller hub
Graphics	Integrated Intel® HD graphics 530
Memory	Up to 32 GB DDR4-2133 SDRAM (two SODIMM slots)
AMT	Supports AMT 11.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet port	2x Gigabit Ethernet ports by Intel® I219 and I210
PoE+	8x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210, 120W total power budget*
USB 3.1	4x USB 3.1 ports via native XHCI controller
USB 2.0	4x USB 2.0 ports
Video Port	1x stacked VGA + DVI-D 2x DisplayPorts, supporting 4K2K resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1 & COM3) 1x RS-232 port (COM2)
Isolated DIO	4x isolated DI and 4x isolated DO
CAN	1x CAN 2.0 port
Audio	1x mic-in and 1x speaker-out
Storage Interface	
SATA HDD	2x internal SATA port for 3.5" HDD installation, supporting RAID 0/ 1
mSATA	1x full-size mSATA port (mux with mini-PCIe)

Expansion Bus	
mini-PCIe	1x full-size mini-PCIe socket with panel-accessible SIM socket 1x full-size mini-PCIe socket with internal SIM socket (mux with mSATA) 2x full-size mini-PCIe sockets (USB signals only) with internal SIM sockets
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input (IGN/GND/V+)
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 98 mm (H)
Weight	3.5 kg
Mounting	Wall-mount with damping brackets
Environmental	
Operating Temperature	with 35W CPU -25°C to 70°C (with mSATA/ SSD) ** -10°C to 60°C (with 3.5" HDD) **/*** with 65W CPU -25°C to 50°C (with mSATA/ SSD) ** -10°C to 60°C (with 3.5" HDD) **/***
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, 1 Grms, 5-500 Hz, 3 Axes (w/ HDD and damping bracket installed, according to IEC60068-2-64)
Shock	Operating, 30 Grms, Half-sine 11 ms Duration (w/ HDD and damping bracket installed, according to IEC60068-2-27)
EMC	CE/ FCC Class A, according to EN 55032 & EN 55024

** The total power budget for Nuvo-5608VR is related to input voltage. 120W total budget is available with 24 VDC input. When 12 VDC input is applied, the total power budget is limited to 100W.*
*** Operating temperature is verified with 100% CPU loading and 100% HDD loading applied using Passmark® BurnInTest 8.0. For detail testing criteria, please contact Neousys Technology.*
**** Depending on the HDD selected, users may encounter performance degradation in sequential disk write at low/high ambient temperature. No data integrity issue was observed in -10°C to 60°C operating temperature range.*

Last updated: 15 - Jan 2020

Appearance



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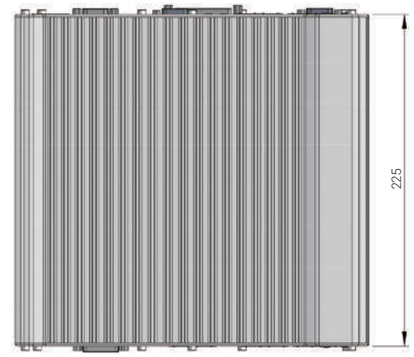

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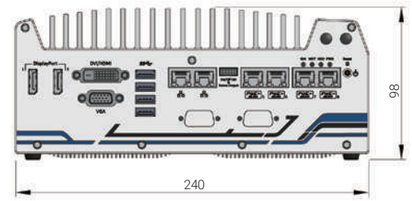


Ordering Information

Model No.	Product Description
Nuvo-5608VR	Intel® 6th-Gen Core™ fanless surveillance system with 8x PoE+ Ports, DIO, CAN bus and 2x 3.5" HDD RAID

Optional Accessories

PA-160W-OW	160W AC/DC power adapter 20V/8A;18AWGx4C/120cm; cord end terminals for terminal block, operating temperature : -30 to 70 °C.
PA-280W-ET2	280W AC/DC power adapter 24V/11.67A;16AWG/100cm; cord end terminals for terminal block, operating temperature : -30 to 60 °C.

POC-764VR

Intel® Core™ i3-N305 Fanless Surveillance System with 4x PoE+ and 2x 2.5" SSD Supporting RAID 0/1

Key Features

- **Intel® Alder Lake Core™ i3-N305 processor 15W with 8 E-Cores**
- **Up to 16GB DDR5-4800 SODIMM**
- **4x GbE ports PoE+ and 1x 2.5GbE LAN Port**
- **4x USB 3.2 Gen2 ports with screw-lock**
- **1x M.2 2280 M key socket & 2x MiniPCIe socket with micro SIM card**
- **2x 2.5" SSD support RAID 0/1/JBOD**
- **-10 °C to 70 °C temperature operation**
- **8-35V DC input with built-in ignition power control**

Introduction

The POC-764VR is Neousys' new ultra-compact surveillance computer platform. Built on the foundation of the POC-700 series, it offers advanced RAID storage and enhanced networking capabilities, making it ideal for surveillance, security, and smart city applications. The system ensures data redundancy, reliability, and seamless connectivity in critical environments.

Featuring four Gigabit PoE+ ports and an ignition function, the POC-764VR can connect up to four IP cameras for both mobile and stationary surveillance applications. Its RJ45 locking mechanism guarantees reliable Ethernet connectivity in dynamic environments. For video recording, it comes with a built-in hardware RAID controller that supports dual 2.5" HDD/SSDs in RAID 0/1 configuration, enhancing data redundancy or providing extensive storage capacity. Additionally, a 2.5 GbE port offers flexible data exchange with backbone infrastructure, while two mini-PCIe sockets support wireless WiFi, LTE/5G, or CAN bus devices.

The POC-764VR is powered by an Intel® Alder Lake Core™ i3-N305 8-core/8-thread processor with 32EUs UHD Graphics, delivering not only significant computing performance but also enabling real-time AI inference through Intel OpenVINO™. Its compact size, PoE+ capabilities, and RAID storage make the POC-764VR an ideal platform for surveillance, public safety monitoring, and asset management applications.

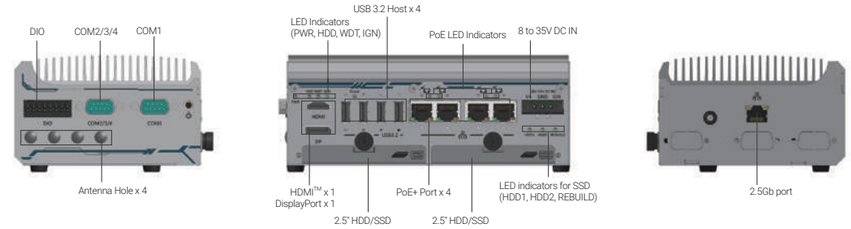
Specifications

System Core	
Processor	Intel® Alder Lake Core™ i3-N305 processor(8C/8T, 1.8/3.8 GHz, 15W TDP)
Graphics	Integrated Intel® UHD Graphics with 32EUs
Memory	Up to 16 GB DDR5-4800 SDRAM (one SODIMM socket)
TPM	Supports dTPM 2.0
I/O Interface	
Ethernet port	4x Gb Ethernet ports by Intel® I350-AM4 (port #1 to 4) 1x 2.5Gb Ethernet port by Intel® I226-IT (port #5)
PoE+	IEEE 802.3at PoE+ on port #1 to 4
Native Video Port	1x DP++, Supporting 4096 x 2160 resolution 1x HDMI™ 1.4b, Supporting 3840 x 2160 30Hz
Serial Port	1x Software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)
USB	4x USB 3.2 Gen2 ports with screw-lock
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Storage Interface	
M.2	1x M.2 2280 M key socket (PCIe Gen3 x1) for NVMe SSD storage (supports SATA signal)
SATA SSD	2x internal SATA port for 2.5" SSD installation, supporting hardware RAID 0/ 1/ JBOD (with hot-swappable functionality in RAID1 mode only)

Expansion Bus	
Mini-PCIe	2x full-size mini PCI Express socket with internal micro SIM socket
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input with built-in ignition power control
Mechanical	
Dimension	175.8mm (W) x 115.5mm (D) x 67.9mm (H)
Weight	1.45 kg
Mounting	DIN-rail mount (standard) or wall-mount (optional)
Environmental	
Operating Temperature	With FAN Kit -10°C to 70°C [1][2] Without FAN Kit -10°C to 55°C [1]
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

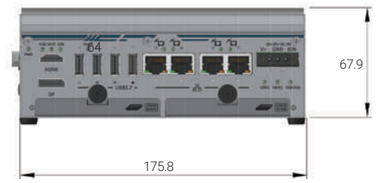
[1] For sub-zero and over 55°C operating temperature, a wide temperature Solid State Disk (SSD) is required.
[2] The optional fan kit is recommended for operating at ambient temperatures higher than 55°C.

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
POC-764VR	Intel® Core™ i3-N305 Fanless Surveillance System with 4x PoE+ and 2x 2.5" SSD Supporting RAID 0/1

Optional Accessories

PA-120W-OW	120W AC/DC power adapter with 20V, 6A DC output, cord end terminals for terminal block. Operating temperature : -30 to 70°C
PA-160W-OW	160W AC/DC power adapter 20V/ 8A; 18AWGx4C/ 120cm, cord end terminals for terminal block, operating temperature : -30°C to 70 °C
Wmkit-H-POC764VR	Wall mounting assembly for POC-764VR, horizontal type
Wmkit-V-POC500	Wall mounting assembly for POC-500, POC-700 series, vertical type
AccsyBx-FAN-POC-700	Fan assembly for POC-700 series, 80x80x15 mm

PCIe-PoE425bt

4-port 2.5GBASE-T Network Adapter with IEEE 802.3bt PoE++ Capability

Key Features

- **Compliant with IEEE 802.3bt PoE++ PSE, provides up to 90W on a single port**
- **4x IEEE 802.3bz 2.5GBASE-T Ethernet ports by Intel® I226-IT controller**
- **Supports 2.5G/ 1G/ 100M/ 10M link speed**
- **Available in RJ-45 connectors**
- **x4, Gen2 PCI Express interface**
- **Supports 9.5 kB jumbo frame, teaming and IEEE 1588**
- **Per-port PoE+ power on/ off control by software API**

Introduction

Introducing one of the world's first 2.5G Ethernet card featuring IEEE 802.3bt PoE++ PSE capability! The PCIe-PoE425bt is a 4-port 2.5GBASE-T PoE++ card leveraging the cutting-edge Intel® I226-IT controller. It complies with IEEE 802bz standard to provide 2.5 Gbps bandwidth and is backward-compatible with 1000BASE-T, 100BASE-TX, and 10BASE-TE Ethernet.

In addition to the increase in bandwidth, the PCIe-PoE425bt also features IEEE 802.3bt PSE capability. IEEE 802.3bt, or PoE++, is the latest addition to Power over Ethernet specifications, allowing a single port to provide up to 90W of power supplied to PD over a standard CAT-5e or CAT-6 Ethernet cable. While COTS high PoE PTZ cameras and outdoor WIFI access points may require higher power than 30W, the PCIe-PoE425bt is particularly useful for directly connecting and powering these devices without an external PoE++ injector.

The PCIe-PoE425bt has four RJ-45 connectors for use with generic Ethernet cables. By incorporating 2.5GBASE-T and PoE++ technologies, the PCIe-PoE425bt is the ideal choice for machine vision and surveillance applications with advanced PoE devices, such as PTZ camera, high-performance WIFI access point and industrial NBASE-T camera.

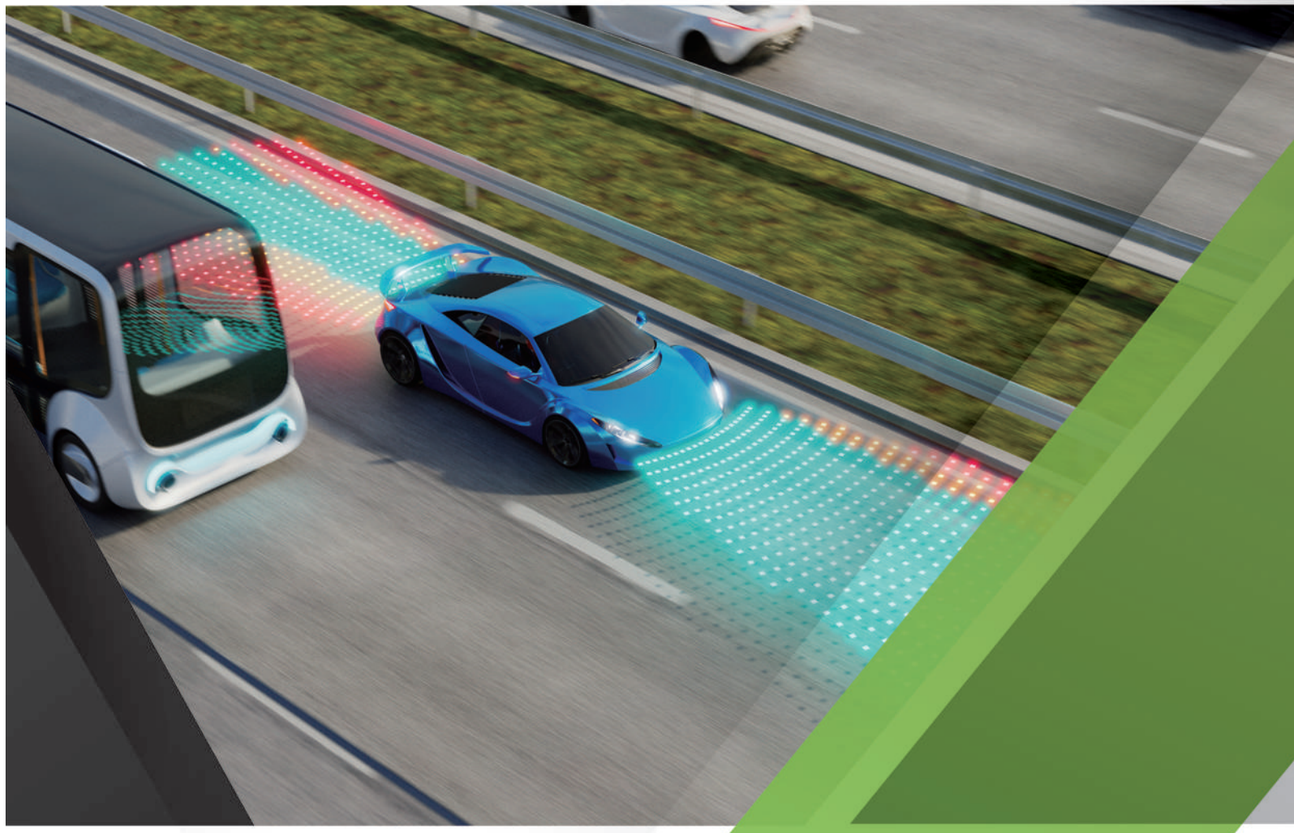
Specifications

Bus Interface	x4, Gen2 PCI Express
# of 2.5G Port	4x 2.5G Ethernet ports by four Intel® I226-IT controllers, supporting 9.5 kB jumbo frame, teaming and IEEE 1588
Network Interface	IEEE 802.3 Ethernet interface for 2500BASE-T (802.3bz), 1000BASE-T (802.3ab), 100BASE-TX (802.3u), and 10BASE-TE (802.3)
PoE Capability	In compliant with IEEE 802.3bt PoE++ Type 3 and Type 4 PSE, maximal 90W output on a single PoE++ port Compatible with 802.3at (PoE+) and 802.3af (PoE) PD
Ethernet Connector	4x RJ-45 connectors
Cable Requirement	100 meters over CAT-5e or better Ethernet cable
Power Requirement	Jumper-select 12VDC input Maximum 5.5A@12V (66W) from PCIe gold finger connector Maximum 12A@12V (144W) from on-board 6-pin PCIe power connector
EMC	CE Class A, according to EN 55032/55035 FCC Class A, according to FCC Part 15, Subpart B
Operating Temperature	0°C to 50°C with airflow (802.3bt mode) 0°C to 55°C with airflow (802.3at mode)
Dimension	167.7mm (L) x 111.2mm (H) x 18.2mm (W)

Ordering Information

Model No.	Product Description
PCIe-PoE425bt	4-Port 2.5GbE 802.3bt PoE++ card with RJ45 connector

GPU Computing



RGS-8805GC

AMD® EPYC™ 7003 "MILAN" Series Rugged HPC Server Supporting NVIDIA® RTX™ A6000/ A4500, 2x 10G and 4x 1G Ethernet and 8 to 48V DC Input

Key Features

- **Powered by AMD® EPYC™ 7003 series processors, supporting up to 64-core/ 128-thread**
- **Supports one NVIDIA® RTX™ A6000/ A4500 with proprietary heat dissipation**
- **Rugged -25°C to 60°C operation for edge applications**
- **2x 10G Ethernet by Intel® X550-AT2 and 4x GbE by Intel® I350-AM4**
- **Supports 4x DDR4 RDIMM/ LRDIMM up to 512GB of memory**
- **Compact 2U 19" rack-mount enclosure with only 350mm depth**
- **Four easy-swappable 2.5" SATA trays for 7mm HDD/ SSD**
- **8 to 48V wide-range DC input with built-in ignition power control**

Introduction

Imagine an HPC server unleashed from an air-conditioned data center room, roaming freely in the field! RGS-8805GC is just that, a rugged HPC server powered by the AMD EPYC™ 7003 series "MILAN" processor with up to 64-core/ 128-thread unparalleled computing power and 512GB memory capacity. Utilizing a unique partitioned enclosure design, it provides a highly effective airflow for CPU and other components to guarantee a reliable -25°C to 60°C operation for field deployment.

To fuel versatile advanced edge AI applications, RGS-8805GC can host one high-end NVIDIA® RTX™ A6000 or A4500 GPU which provides up to 38.7 TFLOPS FP32 or 309.7 TFLOPS tensor performance. It comes with a unique enclosure design that creates a sealed tunnel to efficiently dissipate the heat generated from the RTX™ GPU. RGS-8805GC offers an exceptional balance of CPU and GPU for modern edge AI applications, such as autonomous driving, DL-based vision inspection, and intelligent video analytics.

In terms of I/O connectivity, RGS-8805GC has two 10G Ethernet ports for high-speed data transmission that are backward compatible with 5GBASE-T and 2.5GBASE-T to work with NBASE-T industrial cameras; it has another four Gigabit PoE+ and four USB 3.1 Gen1 ports for connecting additional devices; and four easy-swappable 2.5" HDD trays for data storage. If that's not enough, RGS-8805 provides two x16 PCIe slots for installing additional I/O cards such as frame grabber or GMSL image capture cards. Not to mention that RGS-8805GC is one of few HPC servers that accept wide-range DC input, helping it to adapt to versatile deployment environments.

RGS-8805GC addresses the challenge of deploying a CPU/ GPU server to the field, where installation space, operating temperature, and power supply are some of the most commonly faced issues. A rugged HPC system that can be installed outside of an air-conditioned environment and capable of operating in harsh environments opens the door to new AI-assisted edge computing for more advanced telecom infrastructure, factory automation, ADAS, and V2X applications.

Specifications

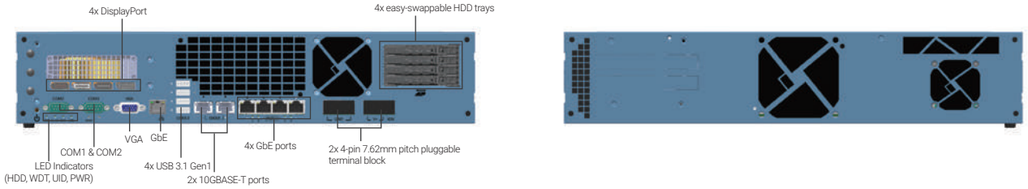
System Core	
Processor	AMD® EPYC™ 7003 "Milan" series server CPU, up to 64-core/ 128-thread
Graphics	Integrated graphics in ASPEED AST2500 BMC, supporting 1920x1200 resolution
Memory	4x RDIMM/ LRDIMM slots, supporting up to 512GB DDR4-3200
TPM	Supports TPM 2.0
I/O Interface	
10G Ethernet	2x 10GBASE-T ports by Intel® X550-AT2, supporting NBASE-T (5G/ 2.5G)
Gigabit Ethernet	4x GbE ports by Intel I350-AM4
PoE+	IEEE 802.3at PoE+ PSE capability on 4x GbE ports
Video Port	1x VGA port via ASPEED AST2500 BMC
USB	4x USB 3.1 Gen1 (5 Gbps) ports
Serial Port	2x software-programmable RS-232/ 422/ 485 ports
Storage Interface	
SATA	4x easy-swappable HDD trays for 2.5" HDD/ SSD installation
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD
Expansion Bus	
PCI Express	1x PCIe x16 slot@Gen4, 16-lanes for RTX™ A6000/ A4500 installation 2x PCIe x16 slots@Gen4, 8-lanes

Expansion Bus	
M.2	1x M.2 3042/ 3052 B key with dual micro-SIM sockets for 4G/ 5G module
Mini PCI Express	2x full-size mini PCI Express sockets with USIM support
Power Supply	
DC Input	2x 4-pin 7.62mm pitch pluggable terminal block for 8 to 48V DC input and ignition control input
Mechanical	
Dimension	444.4 mm (W) x 350 mm (D) x 88.1 mm (H)
Weight	8.6 kg (incl. CPU & RDIMM)
Mounting	Wall-mount with damping brackets (standard) Rack-mount (optional)
Environmental	
Operating Temperature	-25°C to 60°C with 100% CPU/ GPU loading */**
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035

** The CPU and GPU loading tests are applied using Passmark® BurnInTest 9.1 with a 225W CPU. Operating temperature degrades with higher CPU TDP. For detailed testing criteria, please contact Neousys Technology.*
*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

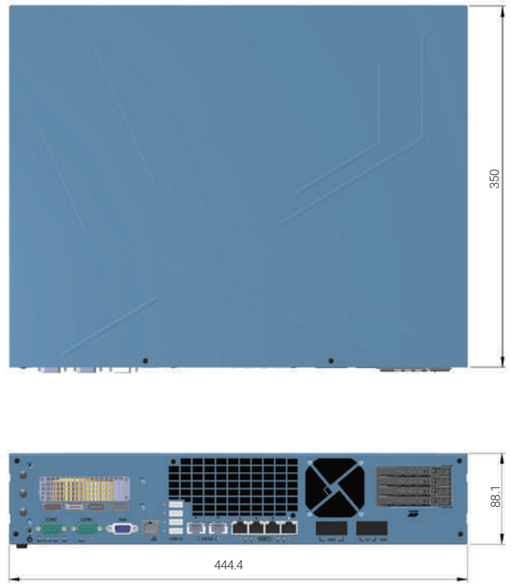
Last updated: 6 - Apr 2022

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
RGS-8805GC	AMD® EPYC™ 7003 "MILAN" series rugged HPC server supporting NVIDIA® RTX™ A6000/ A4500 GPU, 2x 10G and 4x 1G Ethernet and 8 to 48V DC input

Optional Accessories

PA-600W-ENC	600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.

GT-92GC

2U 19" rack mount fanless GPU computer including NVIDIA® 2000 ADA, supporting Intel® 14th / 13th / 12th-Gen Core™ processor

Key Features

- **Intel® 14th/ 13th/ 12th-Gen LGA1700 processor (35W/65W)**
- **Fanless GPU computer with NVIDIA® RTX™ 2000 ADA**
- **2U 19" chassis for rack-mount or wall-mount**
- **8V to 48V wide-range DC input via M12 L-Coded connector**
- **8x GbE PoE+, 1x GbE ports via M12 X-Coded connectors**
- **On-board isolated CAN bus for in-vehicle communication**
- **1x M.2 2280 M key with PCIe-Gen 4x4 for NVMe storge**
- **2x full-size mPCIe sockets with internal SIM sockets**
- **-25°C to 55°C wide-temperature fanless operation**

CE FC

Introduction

GT-92GC is a 19" rack mount, wide-temperature, fanless GPU computer that delivers excellent CPU and GPU performance by leveraging Intel® 14th/ 13th/ 12th-Gen platform and NVIDIA® RTX™ 2000 ADA. Thanks to its high-performance and flexible camera expansion, GT-92GC is ideal for multi-camera applications requiring real time responses, e.g., AI inspection, robotic guidance, and autonomous machines.

GT-92GC has a proven thermal design to guarantee reliable system operation from -25°C to 55°C. It features a passive-cooling design for the motherboard and 70W GPU card. Supporting eight GigE cameras (or IP cameras) and four USB3 cameras, GT-92GC is ideal for various vision-based AI application deployments. It also provides flexible data storage options, including one M.2 2280 Gen4x4 NVMe providing up to 7000 MB/s extreme read/write speeds and two 2.5" SATA HDD/SSD to expand storage capacity.

With performance enhancements and comprehensive I/Os, GT-92GC is the perfect edge AI inference platform for industrial environments such as inspection vehicle, smart agriculture, and autonomous machines.

Specifications

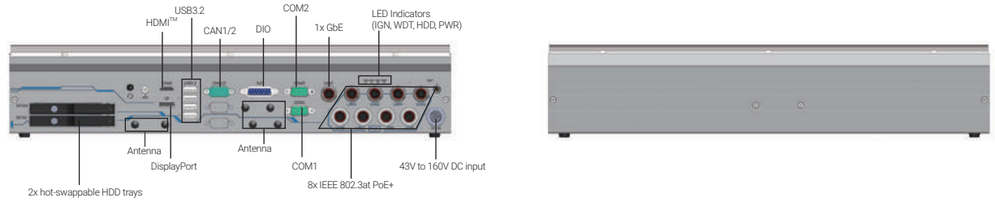
System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU (LGA1700 socket, 65W/ 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® R680E platform controller hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU)	
Acceleration GPU	NVIDIA® RTX™ 2000 ADA	
Memory	Up to 64 GB ECC/ non-ECC DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	1x GbE Ethernet by Intel I219-LM via M12 x-coded connector(with WoL) 8x GbE Ethernet by Intel I350-AM4 via M12 x-coded connectors	
PoE+	8x IEEE 802.3at PoE+ PSE with - with 70 W total power budget [1](12V vehicle power input) - with 100 W total power budget (24V vehicle power input)	
CAN Bus	2x isolated CAN 2.0 port, supporting SocketCAN in Linux	
USB	4x USB 3.2 Gen2x1 (10 Gbps) ports in type-A connectors	
Video Port	1x HDMI™ 1.4, supporting 4096×2160 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	2x isolated 3-wire RS232/ 422/ 485 port (COM1/ COM2)	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	
Audio	1x 3.5 mm jack for mic-in and speaker-out	

Storage Interface	
SATA HDD	2x hot-swappable HDD trays for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen4x4) for NVMe SSD
Internal Expansion Bus	
Mini PCI Express	2x full-size mini PCI Express socket with SIM slot
Power Supply	
DC Input	8V to 48V DC input (M12 L-coded)
Ignition Control	Built-in ignition power control
Mechanical	
Dimension	440mm (W) x 250mm (D) x 88mm (H) (excl. rack-mount bracket)
Weight	7.7 kg
Mounting	Rack-mounting (optional) and wall-mounting (optional)
Environmental	
Operating Temperature	with 35W CPU -25°C to 55°C [3] (without PoE) -25°C to 50°C[3] (with PoE 50W) with 65W CPU -25°C to 35°C [2][3] (without PoE)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
Shock	EN 50155:2017/ IEC 61373, Category I, Class B - Body mounted
EMC	EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035

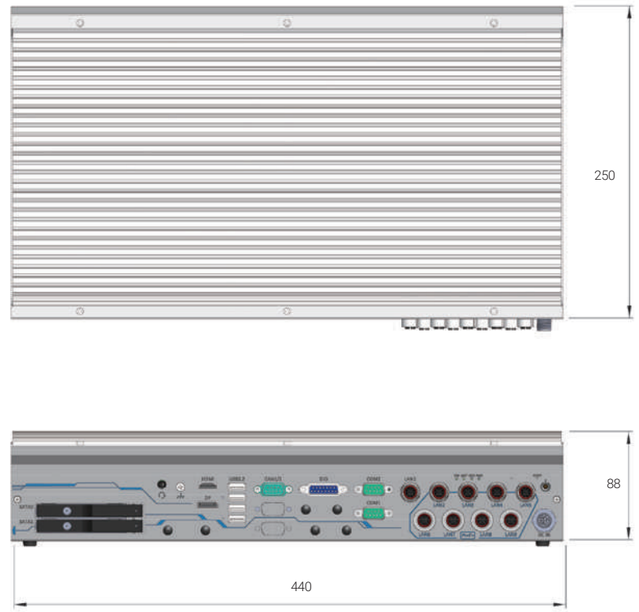
[1] The 12V vehicle power input system imposes a strict limit of 70W on the PoE power budget due to the high current draw caused by the voltage drop to 8V.
[2] For 65W CPUs, the recommended DC input range is 18V to 48V.
[3] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.

Last updated: 3 - Dec 2024

Appearance



Dimensions



Ordering Information

Model No.	Product Description
GT-92GC	2U 19" rack mount fanless GPU computer including NVIDIA® 2000 ADA, supporting Intel® 14th / 13th / 12th-Gen Core™ processor

Optional Accessories

PA-280W-CW6P-2P	280W AC-DC power adapter 24V 11.67A, 85 to 264VAC, -30 to +70°C w/ Wafer FML6P to 2P End Terminal cable for AWP/ SEMIL
PA-600W-C4PY-4P	600W AC-DC power adapter 24V 25A, 85 to 264VAC, -20 to +70°C, w/ 4PY Terminal to 4P End Terminal cable for AWP/ SEMIL
Cbl-M12L5F-CordEnd5-180CM	M12 L-Code 5P(FML) to Cord End Terminal 5P, Length: 180cm
Cbl-M12X8M-RJ45-CAT6A-500CM	M12(8-pole-X-coded) to RJ45, CAT6A, Length: 500CM
Cbl-DB9F-2DB9M-15CM	DB9 (Female) to 2x DB9 (Male), Length: 15CM for CAN1/2
AccsyBx-SplicingConnector	Accessory box kits for Splicing Connector 2-Pole, included 10pcs
Rmkit-GT92	Rack-mount assembly for GT-92 series
Wmkit-GT92	Wall-mount assembly for GT-92 series
mPCIe-M2B	NGFF M.2 key B to mini-PCIe adapter with dual nano-SIM slots
mPCIe-M2E	NGFF M.2 key E to mini-PCIe adapter
mPCIe-M2M	NGFF M.2 key M to mini-PCIe adapter

Nuvo-10208GC Series

Industrial-grade Edge AI Platform Supporting Dual NVIDIA® RTX series 350W GPU Cards, Intel® 14th/ 13th /12th-Gen Core™ Processor with 3x Additional PCIe Slots and 10G/2.5G/1G Ethernet Ports

Key Features

- **Supports dual NVIDIA RTX™ series 350W GPUs with patented locking mechanism**
- **Intel® 14th/ 13th/12th-Gen Core™ 35W/ 65W LGA1700 CPU**
- **Up to 64GB DDR5 4800 with Intel R680E PCH (2x SODIMM)**
- **Three x8, Gen3 PCIe slots (x4 signal) for add-on cards**
- **2x 2.5GbE and 1x GbE and 1x optional 10GBASE-T Ethernet**
- **1x internal M.2 NVMe, 2x 2.5" SATA trays and 1x optional NVMe tray**
- **Support 8 to 48V wide-range DC input with ignition power control**
- **Rugged, -25°C to 60°C operation**

Introduction

Nuvo-10208GC is an Intel® 14th/ 13th/ 12th-Gen rugged edge AI platform supporting dual RTX 40 series/ RTX A6000/A4500 GPU cards to offer GPU performances up to 97 TFLOPS in FP32 for autonomous driving, vision inspection and surveillance applications.

Powered by Intel® 14th/ 13th/ 12th-Gen CPU with up to 24 cores and 32 threads, Nuvo-10208GC offers up to twice the performance when compared to previous Intel 10th or 11th Gen platforms. It inherits proven thermal dissipation design for the CPU and two 350W GPUs to optimize overall system performance in harsh temperature conditions. To secure the bigger and heavier NVIDIA® RTX™ 40 series GPU, Nuvo-10208GC features innovative, patented GPU locking brackets to fasten GPUs to the chassis. It also features Neousys' patented damping bracket to guranatee rock-solid reliability for on-road and off-road in-vehicle applications.

Nuvo-10208GC also incorporates an abundance of I/Os such as 3x 2.5GbE/GbE, 6x USB3.2 Gen2, 1x M.2 M key 2280 Gen4x4 NVMe, dual SATA trays with RAID 0/1 capability, dual display ports and three additional PCIe slots for function expansion. Moreover, it's equipped with one optional 10G Ethernet port for high-bandwidth data transmission, and one optional M.2 2280 NVMe tray for high-speed, removable data storage.

Utilizing Intel's 14th/ 13th/ 12th-Gen platform, proven thermal and rugged mechanical designs with rich I/O interfaces, Nuvo-10208GC is a ruggedized edge AI platform that offers unprecedented GPU and CPU computing power for various industrial edge AI applications.

Specifications

System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	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® R680E Platform Controller Hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)	
Memory	Up to 64GB ECC/ non-ECC DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	2x 2.5G Ethernet by I226-IT and 1x Gigabit Ethernet by I219-LM	
10G Ethernet	Optional 1x 10GBASE-T port by Marvell AQC113CS, supporting NBASE-T (5G/ 2.5G) and 1000BASE-T	
USB 3.2	6x USB 3.2 Gen2x1 (10 Gbps) ports	
USB 2.0	1x USB 2.0 ports (internal for dongle use)	
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2)	
Video Port (Integrated Graphics)	1x VGA output, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Storage Interface		
SATA HDD	2x hot-swappable HDD trays for 2.5" HDD/ SSD installation (support RAID 0/ 1)	
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD Optional 1x M.2 2280 M key tray (PCIe Gen4 x4) for NVMe SSD	

Expansion Bus	
PCI Express	2x PCIe x16 slot@Gen4, 8-lanes 3x PCIe x8 slot@Gen3, 4-lanes
mini-PCIe	2x full-size mini PCI Express sockets with internal SIM sockets
M.2	1x M.2 2242/3052 B key socket with internal SIM sockets
Power Supply	
DC Input	3-pin+ 4-pin pluggable terminal block for 8~48V DC input with ignition control
Mechanical	
Dimension	268 mm (W) x 400 mm (D) x 196 mm (H)
Weight	6.5 Kg
Mounting	Wall-mount with damping brackets
Environmental	
Operating Temperature	With 35W CPU and dual NVIDIA® 350W GPU -25°C to 60°C * with 65W CPU and dual NVIDIA® 350W GPU -25°C ~ 60°C */** (with optional fan kit) -25°C ~ 50°C */** (without optional fan kit)
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
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035

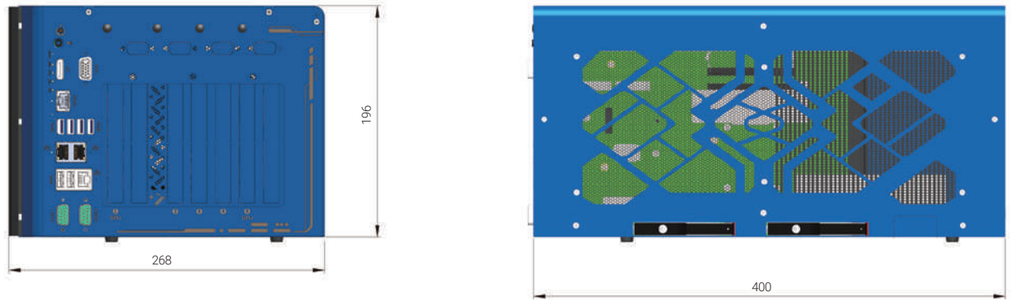
* For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
** For 65W CPUs, the optional fan kit is recommended for operating at ambient temperatures higher than 50°C.

Last updated: 18 - Dec 2024

Appearance

Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-10208GC	Industrial-grade Edge AI Platform supporting dual NVIDIA® RTX series 350W GPU Cards, Intel® 14th/ 13th/ 12th-Gen Core™ processor with 3x additional PCIe slots
Optional 10GbE and M.2 2280 M key tray (PCIe Gen4 x4)	

Optional Accessories

AccsyBx-FAN-Nuvo10208GC	Fan assembly for Nuvo-10208GC series, 92x92x25 mm
TY-NVMe-Nuvo10208GC	M.2 NVMe 2230/42/60/80 SSD Tray
PA-600W-ENC	600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.

Nuvo-10108GC Series

Industrial Edge AI Computer Supporting Single 350W NVIDIA® RTX™ GPU, Intel® 14th/ 13th/ 12th-Gen Core™ Processor with Three Additional PCIe Slots

CE FC

Key Features

- **Supports single NVIDIA® 350W GPU with Gen4 x16 single and dedicated GPU-locking bracket**
- **Intel® 14th/ 13th/ 12th-Gen Core™ 35W/ 65W LGA1700 CPU**
- **Up to 64GB ECC/ non-ECC DDR5 4800 with Intel R680E chipset (2x SODIMM)**
- **Three x8 PCIe slots with Gen3 x4 signal for add-on cards**
- **6x USB 3.2, 2x 2.5GbE, 1x GbE, and 1x optional 10GbE**
- **Two front-accessible storage options: 1x 2.5" SATA tray and 1x optional NVMe tray**
- **8V to 48V wide-range DC input with ignition power control**
- **Rugged, -25°C to 60°C operation**

Introduction

Nuvo-10108GC is Neousys' response to the ruggedized Edge AI computer with extreme CPU and GPU performance for autonomous driving and AI-powered factory automation. It leverages an Intel® 14th /13th/ 12th-Gen CPU and an NVIDIA® RTX™ 40 series or the latest RTX™ 6000 Ada GPU, offering single-precision GPU performances up to 48 TFLOPS or 91 TFLOPS, respectively.

Powered by an Intel® 14th /13th/ 12th-Gen CPU with up to 24 cores and 32 threads, Nuvo-10108GC offers up to twice the performance compared to previous Intel® 10th or 11th-Gen platforms. In addition, Nuvo-10108GC supports ECC memory to deliver mission-critical computation, e.g., automated driving in urban traffic. It inherits a proven thermal dissipation design for the CPU and GPU to guarantee rugged, -25°C to 60°C wide-temperature operation. To withstand continuous shaking and juddering conditions in on-highway and off-highway applications, Nuvo-10108GC features an innovative GPU locking bracket to fasten the GPU with the chassis, and Neousys' patented damping bracket to absorb high-frequency vibration.

Nuvo-10108GC also features an abundance of I/Os, such as 6x USB3.2 Gen2, 3x 2.5GbE/GbE, and 1x optional 10GbE. Expansion-wise, Nuvo-10108GC offers 3x additional PCIe slots for GMSL2/ industrial camera frame grabbers and various add-on cards. Also, it provides 2x full-size mini PCI Express sockets for CAN bus/ COM/ WiFi expansion and 1x M.2 B key sockets for mobile connectivity with 4G LTE, 5G NR modules. In terms of data storage, Nuvo-10108GC offers an M.2 2280 M socket for Gen4x4 NVMe, and dual front-accessible storage options, including a 2.5" SATA HDD/SSD and an optional M.2 2280 Gen4x4 NVMe tray.

By utilizing Intel's 14th /13th/ 12th-Gen platform, state-of-the-art NVIDIA® RTX™ GPU, and Neousys' industrial-grade power, thermal and mechanical designs with rich I/O and expansion, Nuvo-10108GC is a rugged edge AI platform that offers unprecedented GPU and CPU computing power for modern AI applications.

Specifications

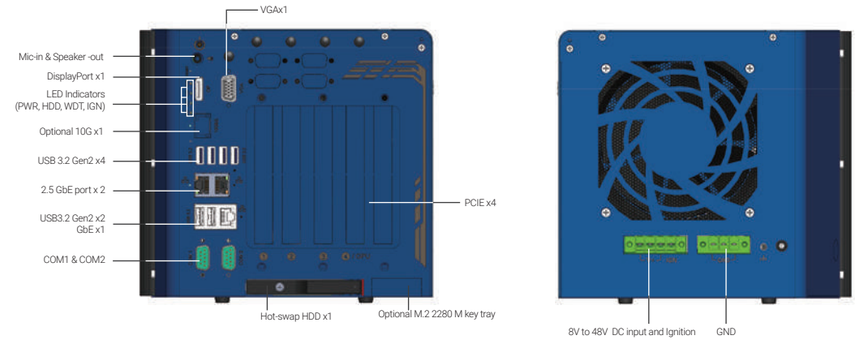
System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU (LGA1700 socket, 65W/ 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	Support Intel® 12th-Gen Core™ CPU (LGA1700 socket, 35W/ 65W 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® R680E Platform Controller Hub	
Graphics	Integrated Intel® UHD Graphics 770 (32EU)/ 730 (24EU)	
Memory	Up to 128GB ECC/ non-ECC DDR5 4800 SDRAM (up to 2x 64GB SODIMM modules)[1]	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	2x 2.5G Ethernet by I226-IT and 1x Gigabit Ethernet by I219-LM	
10G Ethernet (optional)	1x 10GBASE-T port by Marvell AQC113CS, supporting NBASE-T (5G/ 2.5G) and 1000BASE-T (Optional)	
USB 3.2	6x USB 3.2 Gen2x1 (10 Gbps) ports	
USB 2.0	1x USB 2.0 ports (internal for dongle use)	
Video Port (Integrated Graphics)	1x VGA connector, supporting 1920 x 1200 resolution 1x DisplayPort connector, supporting 4096 x 2304 resolution	
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/COM2)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Storage Interface		
SATA HDD	1x front-accessible, hot-swappable HDD trays for 2.5" HDD/ SSD installation	
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD 1x front-accessible M.2 2280 M key tray (PCIe Gen4 x4) for NVMe SSD (Optional)	

Expansion Bus	
PCI Express	1x PCIe x16 slot @Gen4, 16-lanes with 65 mm slot width. The standard GPU locking bracket is designed for NVIDIA® RTX™ A4000, A5000, A6000, 6000 Ada, and selected RTX™ 40 Series GPU cards. 3x PCIe x8 slots @Gen3, 4-lanes
Mini PCI Express	2x full-size mini PCI Express sockets with internal SIM sockets
M.2	1x M.2 2242/3052 B key socket with internal SIM sockets
Power Supply	
DC Input	3-pin + 4-pin pluggable terminal block for 8V to 48V DC input with ignition control[2]
Mechanical	
Dimension	214 mm (W) x 400 mm (D) x 196 mm (H) (without damping bracket)
Weight	6.2 kg (excluding damping bracket)
Mounting	Wall-mount with damping brackets
Environmental	
Operating Temperature	**With 35W CPU and NVIDIA® 350W GPU** -25°C to 60°C [3] **With 65W CPU and NVIDIA® 350W GPU** -25°C to 60°C[3][4] (with optional fan kit) -25°C to 50°C[3][4] (without optional fan kit)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4 (with damping bracket)
Shock	MIL-STD-810H, Method 516.8, Procedure I (with damping bracket)
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

[1] As of Aug, 2023, the maximum single DDR5 SODIMM capacity is 48GB.
[2] System load under 100W, the required DC input range is 8V to 48V
System load between 100W to 480W (single GPU), the required DC input range is 18V to 48V
[3] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[4] For 65W CPUs, the optional fan kit is recommended for operating at ambient temperatures higher than 50°C.

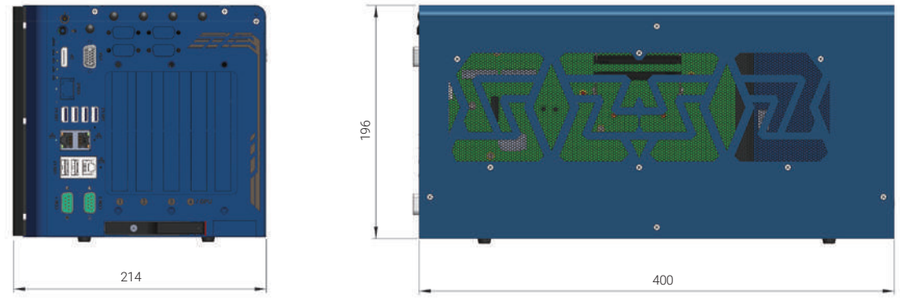
Last updated: 2 - Jul 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-10108GC	Industrial-grade Edge AI Platform supporting single NVIDIA® RTX™ series 350W GPU Cards, Intel® 14th /13th/ 12th-Gen Core™ processor with 3x additional PCIe slots
Optional 10GbE and M.2 2280 M key tray (PCIe Gen4 x4)	

Optional Accessories

AccsyBx-FAN-Nuvo10208GC	Fan assembly for Nuvo-10108GC and Nuvo-10208GC series, 92x92x25 mm
AccsyBx-Cardholder-10108GC-4080S	Nuvo-10108GC GPU bracket kit for selected RTX™ 4080 Super
AccsyBx-Cardholder-10108GC-4070S	Nuvo-10108GC GPU bracket kit for selected RTX™ 4070 Ti Super
TY-NVMe-Nuvo10108GC	M.2 NVMe 2230/42/60/80 SSD Tray for Nuvo-10108GC
Cblkit-GPWR-N10108	GPU power cable kit compatible with RTX™ A4000, A5000, and RTX™ A6000 for the Nuvo-10108GC. Wafer ATX3.0 PCIe 5.0 12VHPWR(12+4P) to x2 Wafer 4.2 6P + 2P, Black, 20AWG, -20°C to +80°C, Length: 35cm
PA-600W-ENC	600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.
PA-1000W-MW-2	AC/DC power supply providing 1000W output power for 90V - 264V AC input voltage and offers rated voltage 24V.

Nuvo-8208GC

Industrial-grade GPU Computing Platform Supporting Dual 250W NVIDIA® Graphics Card, Intel® Xeon® E or 9th/ 8th-Gen Core™ Processor

Key Features

- **Supports dual 250W NVIDIA® graphics cards up to 28 TFLOPS in FP32**
- **Supports Intel® Xeon® E or 9th/8th-Gen Core™ i7/ i5 LGA1151 CPU**
- **Up to 128GB ECC/ non-ECC DDR4 2133 (4x SODIMM)**
- **Two x8 (4-lanes), one x4(1-lane), Gen3 PCIe slots for add-on cards**
- **Two hot-swappable 2.5" SATA HDD/ SSD with RAID 0/ 1 support**
- **8 to 35V wide-range DC input with built-in ignition power control**
- **Patented thermal design for -25°C to 60°C rugged operation***
- **Patented damping brackets* to withstand 3 Grms vibration**

**R.O.C Patent No. M534371 / M491752*

Introduction

Nuvo-8208GC is the world's first dual GPU platform with industrial-grade design and in-vehicle features. Designed specifically to support two high-end 250W NVIDIA® graphics cards, it offers tremendous GPU power up to 28 TFLOPS in FP32 for emerging GPU-accelerated edge computing, such as autonomous driving, vision inspection and surveillance/ security.

Nuvo-8208GC is powered by Intel® Xeon® E or 9th/ 8th-Gen Core™ 8-core/ 16-thread CPUs coupled with workstation-grade Intel® C246 chipset to support up to 128 GB ECC or non-ECC DDR4 memory. The system incorporates two hot-swappable 2.5" trays for easy HDD/ SSD replacement and an M.2 2280 NVMe socket for the ultimate disk performance. Its front-accessible GbE and USB 3.1 Gen1/ Gen2 ports feature screw-lock mechanisms for securing cable connections. In addition to the dual x16 PCIe slots for GPU installation, Nuvo-8208GC has two other x8 PCIe slots and one x4 PCIe slot for expansion cards to extend function sets like data collection, analytics and communication.

Nuvo-8208GC has a brand new power delivery design to accept 8 to 35V wide-range DC input and to handle heavy power requirements from dual 250W GPUs. Along with built-in ignition control, it's feasible to deploy it on a vehicle and directly power it via the car's power system. Mechanical wise, Nuvo-8208GC incorporates Neousys' patented heat dissipation design*, damping brackets* and patented GPU press bar**, making it steady and rock-solid in various conditions.

The Nuvo-8208GC is Neousys' response to the never-ending demand of TFLOPS in industrial GPU platforms. With industrial-grade power, thermal and mechanical design, it pushes versatile AI inference applications from laboratories to field applications, where reliability matters.

**R.O.C Patent No. I687801*

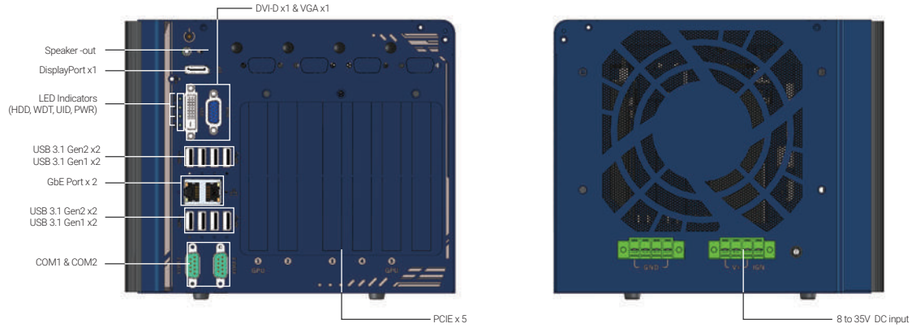
Specifications

System Core	
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2176G/ 2278GE (8C/16T) / 2278GEL (8C/16T) - i7-9700E, i7-9700TE, i7-8700, i7-8700T - i5-9500E, i5-9500TE, i5-8500, i5-8500T - i3-9100E, i3-9100TE, i3-8100, i3-8100T
Chipset	Intel® C246 platform controller hub
Graphics	Independent GPU via x16 PEG port, or integrated Intel® UHD Graphics 630
Memory	Up to 128 GB ECC/ non-ECC DDR4 2133 SDRAM (four SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT
Video Port	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2)
USB3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	1x USB 2.0 port (internal for dongle use)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA	2x hot-swappable HDD trays for 2.5" HDD/ SSD installation
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation
mSATA	2x full-size mSATA port (mux with mini-PCIe)

Expansion Bus	
PCI Express	2x PCIe x16 slot@Gen3, 8-lanes 2x PCIe x8 slots@Gen3, 4-lanes 1x PCIe x4 slot@Gen3, 1-lane
M.2	1x M.2 2242 B key socket supporting dual SIM mode with selected M.2 LTE module
mini-PCIe	2x full-size mini PCI Express socket
Power Supply	
DC Input	2x 4-pin pluggable terminal block for 8 to 35V DC input with ignition control [1]
Mechanical	
Dimension	225 mm (W) x 360 mm (D) x 186 mm (H)
Weight	8.6 Kg
Mounting	Wall-mount with damping brackets
Environmental	
Operating Temperature	with 35W CPU and dual NVIDIA® 250W GPU -25°C to 60°C [3] with >= 65W CPU and dual NVIDIA® 250W GPU -25°C to 60°C [2][3] (configured as 35W TDP mode) -25°C to 50°C [2][3] (configured as 65W TDP mode)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4; and 3 Grms, 5-500 Hz, 3 Axes
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/ FCC Class A, according to EN 55024 & EN 55032

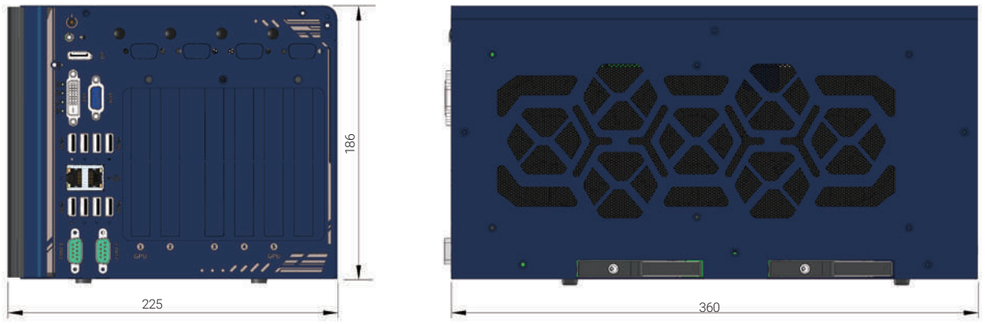
[1] *System load under 100W, the required DC input range is 8V to 35V*
System load between 100W to 480W (single GPU), the required DC input range is 18V to 35V
System load between 480W 1000W (dual GPUs), the required DC input is 24V to 35V
[2] *For i7-9700E and i7-8700 running at 65W mode, the highest 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 obtain higher operating temperature.*
[3] *For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-8208GC	Industrial-grade GPU computing platform supporting dual 250W NVIDIA® graphics cards, Intel® Xeon® E or 9th/ 8th-Gen Core™ processor with 8 to 35V DC input and ignition control

Optional Accessories

PA-480W-DIN	480W AC-DC power Adapter(SDR-480-24) DIN-rail mount, 24V 20A, 90 to 264VAC/127 to 370VDC, Terminal Block, -20 to +70°C, Meanwell SDR-480-24

Nuvo-8108GC-XL

Industrial-grade Edge AI Platform Supporting NVIDIA® RTX™ 30 series GPU Card, Intel® Xeon® E and 9th/ 8th-Gen Core™ Processor, 8 to 48V wide-range DC Input and Built-in Ignition Control

Key Features

- **Supports an NVIDIA® RTX™ 30 series graphics card up to RTX™ 3080**
- **Supports Intel® Xeon® E or 9th/ 8th-Gen Core™ i7/ i5 LGA1151 CPU**
- **Up to 128GB ECC/ non-ECC DDR4 2133 (4x SODIMM)**
- **2x PCIe x16 slot@Gen3, 8-lanes, 2x PCIe x8 slots@Gen3, 4-lanes**
- **2x M.2 B key and 2x full-size mini-PCIe sockets**
- **8 to 48V wide-range DC input with built-in ignition power control**
- **Patented thermal design for -25°C to 60°C rugged operation***
- **Patented damping brackets* to withstand 3 Grms vibration**

**R.O.C Patent No. M534371 / M491752*

Introduction

Nuvo-8108GC-XL is one of the first rugged edge AI platforms to support an NVIDIA® RTX™ 30 series graphics card up to RTX™ 3080. Together, the system offers tremendous GPU power up to 29.8 TFLOPS in FP32 to take GPU-accelerated edge computing such as autonomous driving, vision inspection and intelligent video analytics to the next level.

Powered by an Intel® Xeon® E or 9th/ 8th-Gen Core™ (up to 8-core/ 16-thread) CPU with workstation-grade Intel® C246 chipset to support up to 128 GB ECC or non-ECC DDR4 memory, the system is a strong foundation to built a powerful AI edge computing platform on. Featuring a brand new mechanical design that is optimized to bring out the best in the latest RTX™ 30 series GPU cards and its parallel operation of heterogeneous computing architecture. In addition to the x16 PCIe slot (8-lanes) for RTX™ 30 series GPU installation, Nuvo-8108GC-XL has other one x8 PCIe slots (4-lanes) and one x16 PCIe slot (8-lanes) for users to add on high performance or bandwidth-hungry expansion cards to extend function sets, such as data collection, analytics and communication.

Nuvo-8108GC-XL incorporates Neousys' patented heat dissipation design*, damping brackets* and enhanced GPU stabilizing bar, steadying it for reliable and rock-solid operation in shock or vibration conditions. Continuing the heritage of Neousys' proven power and thermal design, the Nuvo-8108GC-XL accepts 8 to 48V wide-range DC input to handle heavy power requirements from RTX™ 30 series GPU under wide temperature operation. Incorporating the built-in ignition control, it can be deployed on a vehicle and directly power it via the car's power system.

Nuvo-8108GC-XL is Neousys' response to the never-ending demand for TFLOPS performance in industrial GPU platforms. With proven industrial-grade power, guaranteed thermal performance, and new mechanical design, it takes edge AI computing to the next level.

Specifications

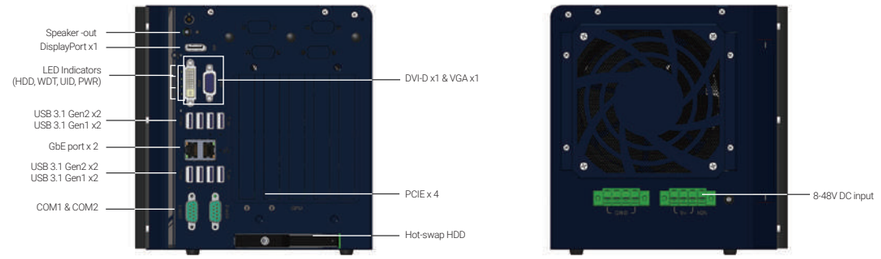
System Core	
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2176G/ 2278GE (8C/16T) / 2278GEL (8C/16T) - i7-9700E, i7-9700TE, i7-8700, i7-8700T - i5-9500E, i5-9500TE, i5-8500, i5-8500T - i3-9100E, i3-9100TE, i3-8100, i3-8100T
Chipset	Intel® C246 Platform Controller Hub
Graphics	Independent GPU via x16 PEG port, or integrated Intel® UHD Graphics 630
Memory	Up to 128 GB ECC/ non-ECC DDR4 2133 SDRAM (four SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT
Video Port	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2)
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	1x USB 2.0 ports (internal for dongle use)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA	1x hot-swappable HDD tray for 2.5" HDD/ SSD installation 1x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation
mSATA	2x full-size mSATA port (mux with mini-PCIe)

Expansion Bus	
PCI Express [1]	2x PCIe x16 slot@Gen3, 8-lanes 2x PCIe x8 slots@Gen3, 4-lanes
M.2	1x M.2 2242 B key socket supporting dual SIM mode with selected M.2 LTE module
Mini-PCIe	2x full-size mini PCI Express socket
Power Supply	
DC Input	2x 4-pin pluggable terminal block for 8 to 48V DC input with ignition control [2]
Mechanical	
Dimension	193 mm (W) x 388 mm (D) x 198 mm (H)
Weight	5.2 kg
Mounting	Wall-mount with damping brackets
Environmental	
Operating Temperature	with 35W CPU and one NVIDIA® RTX™ 30 Series GPU -25°C to 60°C [4] with >= 65W CPU and one NVIDIA® RTX™ 30 Series GPU -25°C to 60°C [3][4] (configured as 35W TDP mode) -25°C to 50°C [3][4] (configured as 65W TDP mode)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4; and 3 Grms, 5-500 Hz, 3 Axes
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/ FCC Class A, according to EN 55024 & EN 55032

[1] *System load under 100W, the required DC input range is 8V to 48V*
System load between 100W to 480W (single GPU), the required DC input range is 18V to 48V
[2] *Note: With an RTX™ graphics card installed, a PCIe x8 slot may be blocked and rendered unusable.*
[3] *For i7-8700 running 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 obtain higher operating temperature.*
[4] *For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

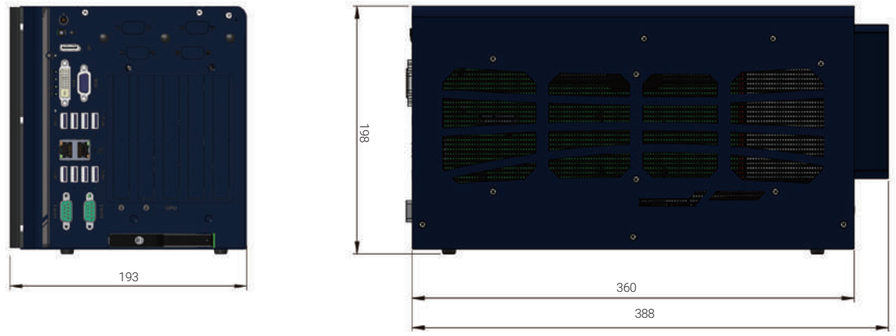
Last updated: 8 - Feb 2023

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-8108GC-XL	Industrial-grade edge AI platform supporting NVIDIA® RTX™ 30 series GPU Card, Intel® Xeon® E and 9th/ 8th-Gen Core™ processor with 8 to 48V wide-range DC input and built-in ignition control

Optional Accessories

PA-480W-DIN	480W AC-DC power Adapter(SDR-480-24) DIN-rail mount, 24V 20A, 90 to 264VAC/127 to 370VDC, Terminal Block, -20 to +70°C, Meanwell SDR-480-24

Nuvo-8108GC-QD

Industrial-grade Edge AI Platform Supporting NVIDIA® RTX™ A6000/ A4500 GPU, Intel® Xeon® E and 9th/ 8th-Gen Core™ Processor

Key Features

- **Supports NVIDIA® RTX™ A6000/ A4500 GPU cards**
- **Supports Intel® Xeon® E or 9th/ 8th-Gen Core™ i7/ i5 LGA1151 CPU**
- **Up to 128GB ECC/ non-ECC DDR4 2133 (4x SODIMM)**
- **One x16 (8-lanes), one x8 (4-lanes), Gen3 PCIe slots for add-on cards**
- **Dedicated GPU card bracket**
- **8 to 48V wide-range DC input with built-in ignition power control**
- **Patented thermal design for -25°C to 60°C rugged operation***
- **Patented damping brackets* to withstand 3 Grms vibration**

R.O.C Patent No. M534371 / M491752

Introduction

Nuvo-8108GC-QD, the latest member of the well-received Nuvo-8108GC series, is a rugged edge AI platform specially designed for NVIDIA® RTX™ A6000 and RTX™ A4500 Ampere GPU cards. The GPUs offer tremendous computing power and product longevity, to take GPU-accelerated edge AI applications such as autonomous driving, vision inspection and intelligent video analytics to the next level of reliability and availability.

Powered by an Intel® Xeon® E or 9th/ 8th-Gen Core™ (up to 8-core/ 16-thread) CPU with workstation-grade Intel® C246 chipset to support up to 128 GB ECC or non-ECC DDR4 memory, it has a strong foundation for building a powerful AI edge computing platform. It has a refined thermal dissipation design to optimize GPU performance in high-temperature environments. Additionally, Nuvo-8108GC-QD comes with a dedicated mounting bracket for RTX™ A6000/ A4500 to keep the GPU card firmly secured in the PCIe slot. Along with Neousys' patented damping brackets*, it ensures rock-solid operation in intensive shock and vibration conditions.

The addition of RTX™ A6000/ A4500 to Neousys' GPU computer portfolio realizes an edge AI platform with system-level longevity and up to 28 TFLOPS computing power. Combining proven power design, guaranteed thermal performance, and superior mechanical ruggedness, Nuvo-8108GC-QD brings unprecedented longevity, computing power, flexibility and reliability to edge AI computing.

Specifications

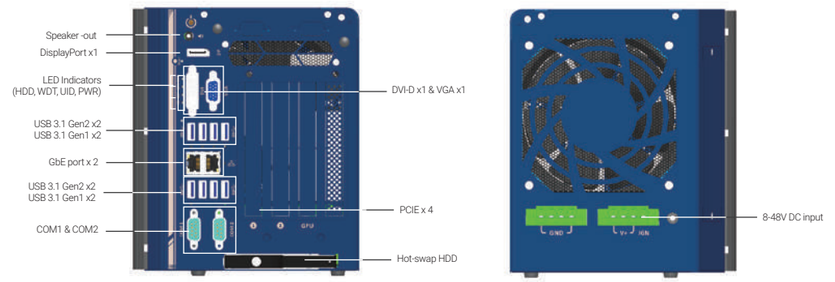
System Core	
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2176G/ 2278GE (8C/16T) / 2278GEL (8C/16T) - i7-9700E, i7-9700TE, i7-8700, i7-8700T - i5-9500E, i5-9500TE, i5-8500, i5-8500T - i3-9100E, i3-9100TE, i3-8100, i3-8100T
Chipset	Intel® C246 Platform Controller Hub
Graphics	Independent NVIDIA® RTX™ A6000/ A4500 GPU via x16 PEG port, or integrated Intel® UHD graphics 630
Memory	Up to 128 GB ECC/ non-ECC DDR4 2133 SDRAM (four SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT
Video Port	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2)
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	1x USB 2.0 ports (internal for dongle use)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA	1x hot-swappable HDD tray for 2.5" HDD/ SSD installation 1x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation
mSATA	2x full-size mSATA port (mux with mini-PCIe)

Expansion Bus	
PCI Express	2x PCIe x16 slot@Gen3, 8-lanes 2x PCIe x8 slots@Gen3, 4-lanes
M.2	1x M.2 2242 B key socket supporting dual SIM mode with selected M.2 LTE module
Mini-PCIe	2x full-size mini PCI Express socket
Power Supply	
DC Input	2x 4-pin pluggable terminal block for 8 to 48V DC input with ignition control [1]
Mechanical	
Dimension	170.2 mm (W) x 360 mm (D) x 201.8 mm (H)
Weight	5.8 kg
Mounting	Neousys' patented damping brackets
Environmental	
Operating Temperature	with 35W CPU and one NVIDIA® RTX™ A6000/ A4500 GPU -25°C to 60°C [3] with >= 65W CPU and one NVIDIA® RTX™ A6000/ A4500 GPU -25°C to 60°C [2][3] (configured as 35W TDP mode) -25°C to 50°C [2][3] (configured as 65W TDP mode)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/ FCC Class A, according to EN 55024 & EN 55032

[1] *System load under 100W, the required DC input range is 8V to 48V*
System load between 100W to 480W (single GPU), the required DC input range is 18V to 48V
[2] *For i7-9700/ 8700 running at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading is applied. Users can configure CPU power in the BIOS to obtain higher operating temperatures.*
[3] *For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

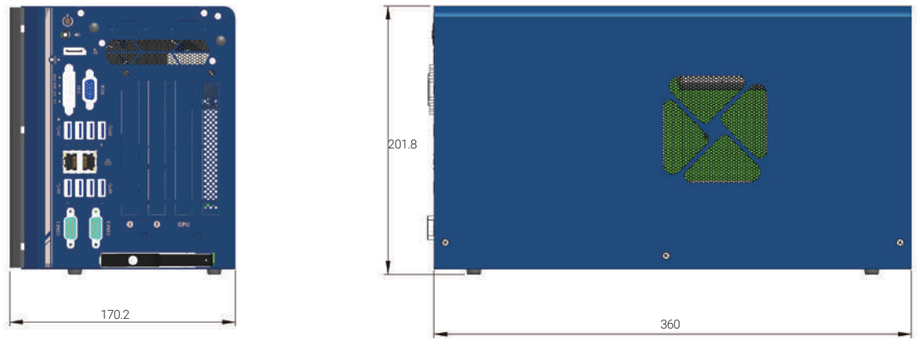
Last updated: 8 - Feb 2023

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-8108GC-QD	Industrial-grade edge AI platform supporting NVIDIA® RTX™ A6000/ A4500 GPU, Intel® Xeon® E and 9th/ 8th-Gen Core™ processor with 8 to 48V wide-range DC input and built-in ignition control

Optional Accessories

PA-480W-DIN	480W AC-DC power Adapter(SDR-480-24) DIN-rail mount, 24V 20A, 90 to 264VAC/127 to 370VDC, Terminal Block, -20 to +70°C, Meanwell SDR-480-24
PA-600W-ENC	600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.

Nuvo-8108GC

Industrial-grade GPU Computing Edge AI Platform Supporting an NVIDIA® RTX™ 30 Series Graphics Card, Intel® Xeon® E or 9th/ 8th-Gen Core ™ Processor

Key Features

- **Supports an NVIDIA® RTX™ 30 Series graphic card**
- **Supports Intel® Xeon® E or 9th/ 8th-Gen Core™ i7/ i5 LGA1151 CPU**
- **Up to 128GB ECC/ non-ECC DDR4 2133 (4x SODIMM)**
- **2x PCIe x16 slot@Gen3, 8-lanes, 2x PCIe x8 slots@Gen3, 4-lanes**
- **1x M.2 M key, 1x M.2 B key and 2x full-size mini-PCIe sockets**
- **8 to 48V wide-range DC input with built-in ignition power control**
- **Patented thermal design for -25°C to 60°C rugged operation***
- **Patented damping brackets* to withstand 3 Grms vibration**

**R.O.C Patent No. M534371 / M491752*

Introduction

Nuvo-8108GC is a rugged edge AI platform with industrial-grade design and in-vehicle features. Designed specifically to support a high-end 250W NVIDIA® graphics card, it offers tremendous GPU power up to 14 TFLOPS in FP32 for emerging GPU-accelerated edge computing, such as autonomous driving, vision inspection and surveillance/ security.

Nuvo-8108GC is powered by Intel® Xeon® E or 9th/ 8th-Gen Core™ (up to 8-core/ 16-thread) CPUs coupled with workstation-grade Intel® C246 chipset to support up to 128 GB ECC or non-ECC DDR4 memory. The system incorporates an internal 2.5" HDD/ SSD tray and one hot-swappable 2.5" HDD/ SSD tray for easy replacement. There is also an M.2 2280 NVMe socket for the fast read/ write performance. Its front-accessible GbE and USB 3.1 Gen1/ Gen2 ports feature screw-lock mechanisms for securing cable connections. In addition to the x16 PCIe slot (8-lanes) for GPU installation, Nuvo-8108GC has other two x8 PCIe slots (4-lanes) and one x16 PCIe slot (8-lanes) for expansion cards to extend function sets like data collection, analytics and communication.

Nuvo-8108GC has a brand new power delivery design to accept 8 to 48V wide-range DC input and to handle heavy power requirements from 250W GPU. Along with built-in ignition control, it's feasible to deploy it on a vehicle and directly power it via the car's power system. Mechanical wise, Nuvo-8108GC incorporates Neousys' patented heat dissipation design*, damping brackets* and patent-pending GPU press bar, making it steady and rock-solid in various conditions. The Nuvo-8108GC is Neousys' response to the never-ending demand of TFLOPS in industrial GPU platforms. With industrial-grade power, thermal and mechanical design, it pushes versatile AI inference applications from laboratories to field applications, where reliability matters.

Specifications

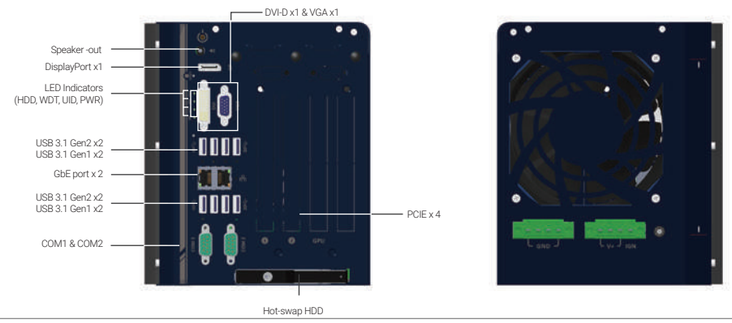
System Core	
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2176G/ 2278GE (8C/16T) / 2278GEL (8C/16T) - i7-9700E, i7-9700TE, i7-8700, i7-8700T - i5-9500E, i5-9500TE, i5-8500, i5-8500T - i3-9100E, i3-9100TE, i3-8100, i3-8100T
Chipset	Intel® C246 Platform Controller Hub
Graphics	Independent GPU via x16 PEG port, or integrated Intel® UHD Graphics 630
Memory	Up to 128 GB ECC/ non-ECC DDR4 2133 SDRAM (four SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT
Video Port	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports(COM1/ COM2)
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	1x USB 2.0 ports (internal for dongle use)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA	1x hot-swappable HDD tray for 2.5" HDD/ SSD installation 1x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation
mSATA	2x full-size mSATA port (mux with mini-PCIe)

Expansion Bus	
PCI Express	2x PCIe x16 slot@Gen3, 8-lanes 2x PCIe x8 slots@Gen3, 4-lanes
M.2	1x M.2 2242 B key socket supporting dual SIM mode with selected M.2 LTE module
Mini-PCIe	2x full-size mini PCI Express socket
Power Supply	
DC Input	2x 4-pin pluggable terminal block for 8 to 48V DC input with ignition control [1]
Mechanical	
Dimension	170 mm (W) x 360 mm (D) x 198 mm (H)
Weight	5 kg
Mounting	Neousys' patented damping brackets
Environmental	
Operating Temperature	with 35W CPU and one NVIDIA® 250W GPU -25°C to 60°C [3] with >= 65W CPU and one NVIDIA® 250W GPU -25°C to 60°C [2][3] (configured as 35W TDP mode) -25°C to 50°C [2][3] (configured as 65W TDP mode)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4; and 3 Grms, 5-500 Hz, 3 Axes
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/ FCC Class A, according to EN 55024 & EN 55032

[1] *System load under 100W, the required DC input range is 8V to 48V*
System load between 100W to 480W (single GPU), the required DC input range is 18V to 48V
[2] *For i7-9700/ 8700 running at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading is applied. Users can configure CPU power in the BIOS to obtain higher operating temperatures.*
[3] *For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Last updated: 8 - Feb 2023

Appearance



Dimensions

Unit : mm

Ordering Information

Model No.	Product Description
Nuvo-8108GC	Industrial-grade edge AI platform supporting 250W NVIDIA® GPU Card, Intel® Xeon® E and 9th/ 8th-Gen Core™ processor with 8 to 48V wide-range DC input and built-in ignition control

Optional Accessories

PA-480W-DIN	480W AC-DC power Adapter(SDR-480-24) DIN-rail mount, 24V 20A, 90 to 264VAC/127 to 370VDC, Terminal Block, -20 to +70°C, Meanwell SDR-480-24

Nuvo-8240GC

Industrial-grade GPU computing Edge AI platform supporting dual NVIDIA® L4/ T4/ A2 and Intel® Xeon® E and 9th/ 8th-Gen Core™ processor

Key Features

- **Supports dual NVIDIA® L4/ T4/ A2 GPU**
- **Supports Intel® Xeon® E or 9th/ 8th-Gen Core™ i7/ i5 LGA1151 CPU**
- **Up to 128GB ECC/ non-ECC DDR4 2133 (4x SODIMM)**
- **Two x8 (4-lanes), Gen3 PCIe slots for add-on cards**
- **1x M.2 M key, 1x M.2 B key and 2x full-size mini-PCIe sockets**
- **8 to 48V wide-range DC input with built-in ignition power control**
- **Proven thermal design for -25°C to 60°C rugged operation***
- **Patented damping brackets* to withstand 3 Grms vibration**

**R.O.C Patent No. M491752*

Introduction

Nuvo-8240GC is a rugged edge AI GPU computing platform designed specifically to support dual NVIDIA® L4/ T4/ A2 GPUs for advanced inference acceleration applications. It features NVIDIA® multi-precision NVIDIA® Ada Lovelace Cores while offering tremendous GPU power up to 484 TFLOPS in FP16 and 970 TOPS in INT8 for emerging GPU-accelerated edge computing and advanced AI inference. In addition, Nuvo-8240GC is powered by Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU up to 8-core/ 16-thread coupled with workstation-grade Intel® C246 chipset to support up to 128 GB ECC or non-ECC DDR4 memory.

The system incorporates one internal 2.5" SATA HDD/ SSD slot and one hot-swappable 2.5" tray for easy HDD/ SSD replacement. There is also an M.2 2280 NVMe SSD socket for ultimate disk performance . Its front-accessible GbE and USB 3.1 Gen1/ Gen2 ports feature screw-lock mechanisms for secure cable connections. In addition to the dual x16 PCIe slots (8-lanes) for NVIDIA® L4/ T4/ A2 installation, Nuvo-8240GC has other two x8 PCIe slots (4-lanes) for expansion cards to extend function sets, making it that much more flexible for specific applications such as data collection, analytics and communication.

Nuvo-8240GC has a brand new power delivery design to accept 8 to 48V wide-range DC input with built-in ignition control. Mechanical wise, Nuvo-8240GC incorporates Neousys' proven heat dissipation design, damping brackets* for withstanding 3 Grms vibration, making it steady and rock-solid in various conditions. The Nuvo-8240GC is Neousys' response to the never-ending performance demand in industrial edge AI platforms and now with double the inference power, Nuvo-8240GC is ready to take it to the next level.

Specifications

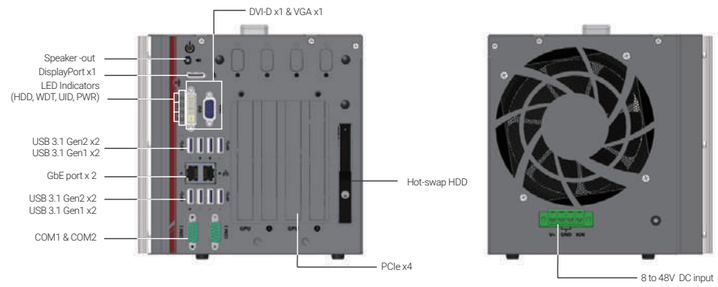
System Core	
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2176G/ 2278GE (8C/16T) / 2278GEL (8C/16T) - i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T - i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T - i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
Chipset	Intel® C246 Platform Controller Hub
Graphics	Integrated Intel® UHD Graphics 630
Memory	Up to 128 GB ECC/ non-ECC DDR4 2133 SDRAM (four SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT
Video Port	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/COM2)
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
USB 2.0	1x USB 2.0 ports (internal use)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA	1x hot-swappable HDD tray for 2.5" HDD/ SSD installation 1x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation
mSATA	2x full-size mSATA port (mux with mini-PCIe)

Expansion Bus	
PCI Express	2x PCIe x16 slot@Gen3, 8-lanes 2x PCIe x8 slots@Gen3, 4-lanes
M.2	1x M.2 2242 B key socket supporting dual SIM mode with selected M.2 LTE module
Mini-PCIe	2x full-size mini PCI Express socket
Power Supply	
DC Input	1x 4-pin pluggable terminal block for 8 to 48V DC input with ignition control
Mechanical	
Dimension	190 mm (W) x 271 mm (D) x 198.5 mm (H)
Weight	5 kg
Mounting	Wall-mount with damping brackets
Environmental	
Operating Temperature	**with 35W CPU** -25°C to 60°C **/*** **with 65W CPU** -25°C to 60°C **/*** (configured as 35W TDP mode) -25°C to 50°C **/*** (configured as 65W TDP mode) In compliance with NVIDIA® L4/ T4/ A2 warranty policy, an operating temperature of 0°C to 50°C is required for systems with NVIDIA® L4/ T4/ A2 installed
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4 and 3Grms
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I,Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55024

*** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*
**** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

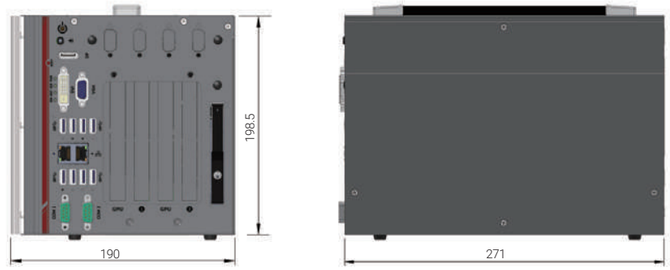
Last updated: 30 - Jan 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-8240GC	Industrial-grade edge AI platform supporting dual NVIDIA® L4/ T4/ A2 and Intel® Xeon® E and 9th/ 8th-Gen Core™ processor

Optional Accessories

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

Nuvo-6108GC/ Nuvo-6108GC-IGN

Industrial-grade In-vehicle GPU-computing Platform with 250W NVIDIA® GPU and Intel® Xeon®E3 v5 and 6th-Gen Core™ Processor

CE FC c UL us LISTED E511805

Key Features

- **Supports Intel® Xeon® E3 v5 or 6th-Gen Core™ i7/ i5 LGA1151 CPU**
- **Supports NVIDIA® GPU (up to 250W TDP)**
- **Patented thermal design for -25 °C to 60 °C rugged operation***
- **Two x8, Gen3 PCIe slots for add-on cards**
- **Dual GbE ports and four USB 3.1 ports**
- **Four 2.5” SATA hard drives with RAID 0/ 1/ 5/ 10 support**
- **Three 2.5" SATA hard drives with RAID 0/ 1/ 5 support (Nuvo-6108GC-IGN)**
- **Patented easy-swap trays* for HDD replacement (Nuvo-6108GC-IGN)**
- **Automatic temperature sensing and fan control**
- **Patented damping brackets* to withstand 1 Grms vibration**
- **Built-in ignition control (Nuvo-6108GC-IGN)**

**R.O.C Patent No. M534371 / M491241 / M491752*

Introduction

Nuvo-6108GC series is world’s first industrial-grade GPU computer supporting high-end graphics cards. It’s designed to fuel emerging GPU-accelerated applications, such as artificial intelligence, VR, autonomous driving and CUDA computing by accommodating a 250W NVIDIA® GPU.

Leveraging Intel® C236 chipset, Nuvo-6108GC series supports Xeon® E3 v5 or 6th-Gen Core™ i7/ i5 CPU with up to 32 GB ECC/ non-ECC DDR4 memory. It incorporates general computer I/O like Gigabit Ethernet, USB 3.1 and serial ports. In addition to the x16 PCIe port for GPU installation, Nuvo-6108GC series also has two x8 PCIe slots so you can install additional high performance expansion card with high bandwidths for data collection analytics and communication.

Nuvo-6108GC series comes with sophisticated power design to handle heavy power consumption and power transient of a 250W GPU. Furthermore, to have reliable GPU performance for industrial environments, Nuvo-6108GC series utilizes Neousys’ patented design*, a tuned cold air intake to effectively dissipate the heat generated by GPU. This unique design guarantees operation at 60°C under 100% GPU loading, making Nuvo-6108GC series extremely reliable for demanding field applications.

The new model Nuvo-6108GC-IGN features built-in ignition power control and two of its three 2.5” drives come with Neousys’ patented easy-swap trays for simple HDD/ SSD replacement.

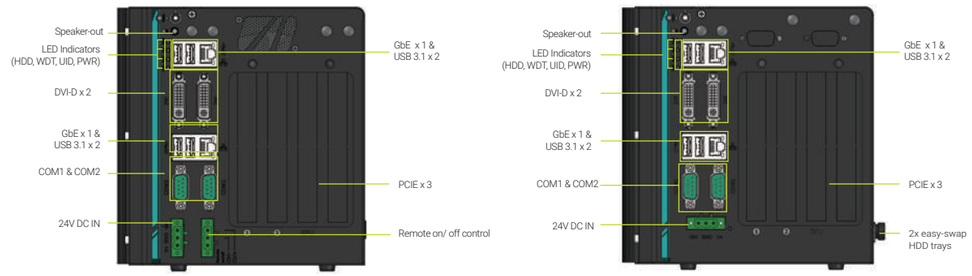
Specifications

System Core	
Processor	Intel® Xeon® E3 v5 or 6th-Gen Core™ LGA1151 CPU - Intel® Xeon® Processor E3-1275 v5 (8M Cache, 3.6/ 4.0 GHz) - Intel® Xeon® Processor E3-1268L v5 (8M Cache, 2.4/ 3.4 GHz) - Intel® Core™ i7-6700 (8M Cache, 3.4/ 4.0 GHz) - Intel® Core™ i5-6500 (6M Cache, 3.2/ 3.6 GHz) - Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz) - Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz)
Chipset	Intel® C236 platform controller hub
Graphics	Independent GPU via x16 PEG port, or integrated Intel® HD 530 controller
Memory	Up to 32 GB ECC/ non-ECC DDR4-2133
I/O Interface	
Ethernet	1x Gigabit Ethernet port by Intel® I219-LM 1x Gigabit Ethernet port by Intel® I210-IT
Video Port	2x DVI-Ds for DVI outputs, supporting 1920x1200 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports
USB 3.1	4x USB 3.1 Gen1 (5 Gbps) ports
Audio	1x speaker-out
Storage Interface	
SATA	4x SATA ports for 2.5” HDD/ SSD installation, supporting RAID 0/ 1/ 5/ 10 (Nuvo-6108GC) 2x easy-swap HDD trays for 2.5” HDD/ SSD installation (Nuvo-6108GC-IGN) 1x Internal SATA port for 2.5” HDD/ SSD installation, supporting RAID 0/ 1/ 5 (Nuvo-6108GC-IGN)

Expansion Bus/ Internal I/O Interface	
PCI Express	1x PCIe x16 slot @ Gen3, 16-lanes PCIE signals for GPU 2x PCIe x8 slot @ Gen3, 4-lanes PCIE signals
M.2	1x M.2 B key socket for 3G/4G options with SIM socket
mini-PCIe	1x full-size mini PCI Express socket
Remote Ctrl. & Status Output	1x 2x6-pin 2.0mm pin-header connector for remote on/ off control and status LED output
Power Supply	
DC Input	24V DC input
Input Connector	3-pin pluggable terminal block for DC input (IGN/ GND/ V+) (Nuvo-6108GC-IGN)
Mechanical	
Dimension	167 mm (W) x 360 mm (D) x 174 mm (H) (Nuvo-6108GC) 178 mm (W) x 360 mm (D) x 174 mm (H) (Nuvo-6108GC-IGN)
Weight	4.7 kg (incl. CPU, GPU, memory and HDD)
Mounting	Wall-mount with damping brackets
Environmental	
Operating Temperature	-25°C to 60°C with 100% CPU/ GPU loading **/***
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, 1 Grms, 5-500 Hz, 3 Axes (w/ GPU, fan and HDD), according to IEC60068-2-64)
EMC	CE/ FCC Class A, according to EN 55022, EN 55024 & EN 55032

*** For i7-6700 running 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 obtain higher operating temperature.*
**** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

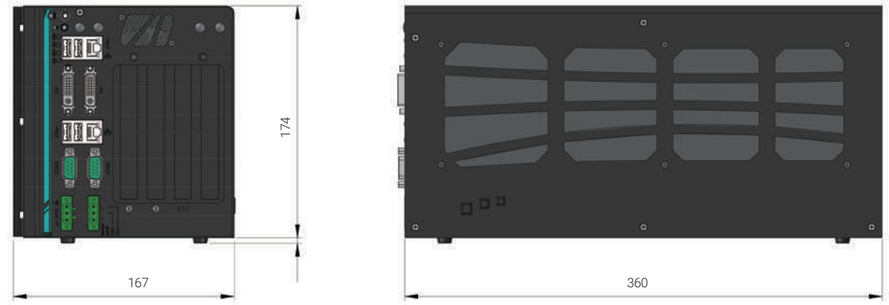
Appearance



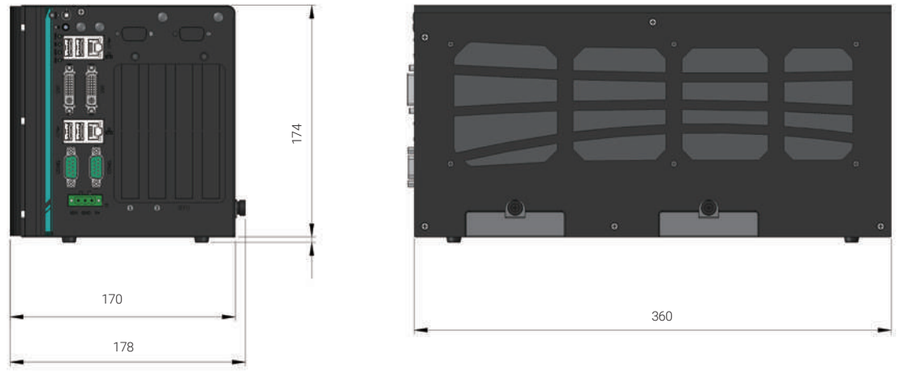
Dimensions

Unit : mm

Nuvo-6108GC



Nuvo-6108GC-IGN



Ordering Information

Model No.	Product Description
Nuvo-6108GC	Industrial-grade GPU computing platform supporting 250W NVIDIA® graphics card and Intel® Xeon® E3 v5 and 6th-Gen Core™ processor
Nuvo-6108GC-IGN	Industrial-grade GPU computing platform supporting up to 250W NVIDIA® graphics card, Intel® Xeon® E3 v5 and 6th-Gen Core™ processor with built-in ignition control and 2x easy-swap trays

Optional Accessories

PA-480W-DIN	480W AC-DC power adapter DIN-rail mount, 24V 20A, 90 to 264VAC/127 to 370VDC, terminal block, -20 to70°C, Meanwell SDR-480-24

Nuvo-9160GC Series

Ruggedized AI Inference Platform supporting 130W NVIDIA® RTX™ GPU and Intel® 14th/ 13th/ 12th-Gen Core™ Processor

Key Features

- **Supports Intel® 14th/13th/12th-Gen Core™ 24C/ 32T 35W/ 65W LGA1700 CPU**
- **Support NVIDIA® RTX™ series GPU card up to 130W TDP**
- **-25°C to 60°C wide temperature rugged operation**
- **5x 2.5GbE and 1xGbE with optional PoE+ (ports 3 to 6)**
- **1x USB 3.2 Gen2x2 type-C and 6x USB 3.2 type-A ports**
- **M.2 2280 M key socket (Gen4x4) supporting NVMe SSD**
- **Accommodates two 2.5" SATA HDD/ SSD with RAID 0/ 1 support**
- **MezIO® interface for add-on expansion**

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

Introduction

Nuvo-9160GC is a rugged edge AI computer that delivers superior CPU and GPU performance by leveraging Intel's 14th/13th/12th Gen platform and an NVIDIA® RTX™ GPU card up to 130W. The system's standard and optional GPU brackets can accommodate selected GPU cards including RTX™ 3050, RTX™ 4060, NVIDIA® RTX™ A2000, and RTX™ 4000 SFF Ada. The GPU bracket is designed to secure the GPU card to provide excellent shock and vibration resistance in volatile conditions.

Benefiting from the cutting-edge Intel® 7 photolithography, Intel®'s 14th/13th/12th Gen processors offer up to 24 cores/ 32 threads to provide up to double the performance when compared to previous Intel® 11th/ 10th Gen CPUs. The latest NVIDIA® 130W RTX™ GPU contributes up to 15 TFLOPS of FP32 performance to fuel real-time AI inference applications involving multiple cameras such as production line vision inspection, intelligent video analytics for surveillance or ITS, or autonomous mobile robot (AMR).

Nuvo-9160GC has a proven thermal design to guarantee reliable system operation from -25°C to 60°C. It features a passive-cooling design for the motherboard and segregated patented ventilation design* for the 130W GPU card within Neousys' patented expansion Cassette*. The support of six GigE cameras (or IP cameras) and six USB3 cameras makes Nuvo-9160GC ideal for various vision-based AI application deployments. It also provides flexible data storage options, including one M.2 2280 Gen4x4 NVMe providing up to 7000 MB/s extreme read/write speeds and two 2.5" SATA HDD/SSD to expand storage capacity.

With performance enhancements and comprehensive I/Os, Nuvo-9160GC is the perfect edge AI inference platform for industrial environments from factory automation, smart agriculture, and autonomous machines.

Specifications

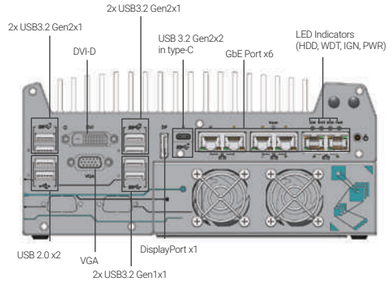
System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP)[1][2] - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU[1][2] (LGA1700 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
Graphics	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)	
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	5x 2.5G Ethernet by I225-IT and 1x Gigabit Ethernet by I219-LM with screw-lock	
PoE+	Optional IEEE 802.3at PoE+ PSE for Port 3 to Port 6. 100W total power budget	
USB 3.2	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	
USB 2.0	2x USB 2.0 ports	
Video Port (Integrated Graphics)	1x VGA connector, supporting 1920 x 1200 resolution 1x DVI-D connector, supporting 1920 x 1200 resolution 1x DisplayPort connector, supporting 4096 x 2304 resolution	
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/COM2) 2x RS-232 ports (COM3/COM4)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Storage Interface		
SATA HDD	2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1	
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD	

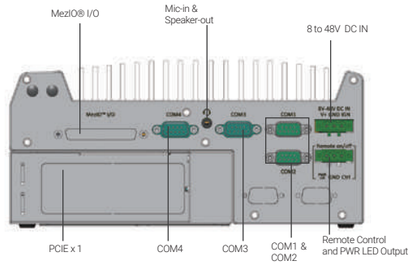
Expansion Bus	
PCI Express	1x PCIe x16 slot@Gen3, 16-lanes PCIe signals in Cassette for installing an NVIDIA® graphics card up to 130W TDP (Max. graphics card dimension is 188 mm(L) x 131 mm(W), dual slot allocation)
Mini PCI Express	1x full-size mini PCI Express socket
M.2	1x M.2 3042/3052 B key socket with SIM slot for M.2 4G/ 5G module
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 48V DC input
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 110.5 mm (H)
Weight	3.89 kg
Mounting	Wall-mount (standard) or damping bracket (optional)
Environmental	
Operating Temperature	**With 35W CPU and 130W GPU** -25°C to 60°C[3][4] **With 65W CPU and 130W GPU** -25°C to 60°C[3][4] (configured as 35W TDP) -25°C to 50°C[3][4] (configured as 65W TDP)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4 (with optional damping bracket)
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II (with optional damping bracket)
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

[1] A BIOS update may be required for the system to recognize 14th/13th-Gen processors. Please contact Neousys Technology for more information.
[2] Due to I225-IT specification limitation, for systems running 2.5G Ethernet link speeds, please limit the operating temperature to 60°C.
[3] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[4] 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

Last updated: 30 - Jul 2024

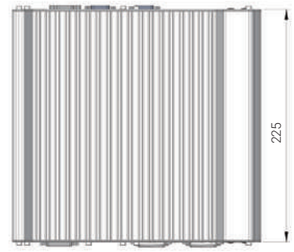
Appearance

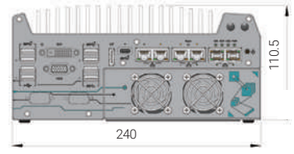




Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9160GC	Ruggedized AI Inference Platform supporting 130W NVIDIA® RTX™ GPU and Intel® 14th/ 13th/ 12th-Gen Core™ Processor
PoE+ Option	Option of 802.3at PoE + PSE for 2.5GbE port 3 to port 6

Optional Accessories

Dmpbr-Nuvo9160	Neousys' patented damping brackets assembly for Nuvo-9160GC
Gpubr-Nuvo9160-01	Nuvo-9160GC GPU bracket kit for RTX™ 4000 SFF Ada and RTX™ A2000
Gpubr-Nuvo9160-02	Nuvo-9160GC GPU bracket kit for selected single fan RTX™ 4060
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.
PA-600W-ENC	600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.
MezIO® Modules	
MezIO®-C180-50	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
MezIO®-C181-50	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports
MezIO®-D220-50	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output
MezIO®-D230-50	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®-U4-50	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 *Only Nuvo-9160GC-PoE support MezIO-G4P*

Nuvo-9166GC Series

Ruggedized Edge AI Inference Computer supporting NVIDIA® L4 GPU and Intel® 14th/ 13th/ 12th-Gen Core™ processor with dual PCIe slots

Key Features

- **Supports NVIDIA® L4 GPU and one additional PCIe card**
- **Supports Intel® 14th/13th/12th-Gen Core™ 24C/ 32T 35W/ 65W LGA1700 CPU**
- **Dedicated heat dissipation for -25°C to 60°C wide-temperature operation**
- **5x 2.5GbE and 1x GbE with optional PoE+ (ports 3 to 6)**
- **1x USB 3.2 Gen2x2 type-C and 6x USB 3.2 type-A ports**
- **M.2 2280 M key socket (Gen4x4) supporting NVMe SSD**
- **Accommodates two 2.5" SATA HDD/ SSD with RAID 0/ 1 support**
- **MezIO® interface for add-on expansion**

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

Introduction

Nuvo-9166GC is a rugged, wide-temperature, Edge AI Inference Computer that delivers excellent CPU and GPU performance by leveraging Intel® 14th/13th/12th-Gen platform and NVIDIA® L4. Thanks to its high-performance density and flexible camera expansion, Nuvo-9166GC is ideal for multi-camera applications requiring real time responses, e.g., AI inspection, robotic guidance, and autonomous machines.

Supporting an Intel® Core™ CPU up to 24 cores/ 32 threads, Nuvo-9166GC provides up to nearly twice the performance when compared to 11th/ 10th Gen platforms. The system also supports NVIDIA® L4, a data center grade GPU powered by NVIDIA® Ada Lovelace architecture for energy-efficient AI acceleration applications, it offers up to 30.3 TFLOPS in FP32 or 485 TOPS in INT8 to set new benchmarks for industrial edge AI computing.

Nuvo-9166GC has a proven thermal design to guarantee reliable system operation from -25°C to 60°C. It features a passive-cooling design for the CPU and DDR5 memory module. There is also a segregated and patented Cassette module with an air tunnel to continuously guide cool airflow through the passive heat sink of NVIDIA® L4, guranteeing optimum performance. Camera connectivity wise, Nuvo-9166GC has six GbE ports and six USB3 ports, and with MezIO® expansion and an additional PCIe slot, Nuvo-9166GC can support up to fourteen industrial GigE cameras or eighteen industrial USB3 cameras. To help store all the data from the multiple cameras is an M.2 2280 Gen4x4 slot supporting an NVMe SSD to offer up to 7000 MB/s extreme read/write speeds and two 2.5" SATA HDD/SSD slots to further expand storage capacity.

By integrating rugged construction, wide operating temperature, server grade AI inference performance, powerful hybrid CPU, and camera expansion capability, Nuvo-9166GC is the perfect Edge AI Inference Computer for versatile AI applications.

Specifications

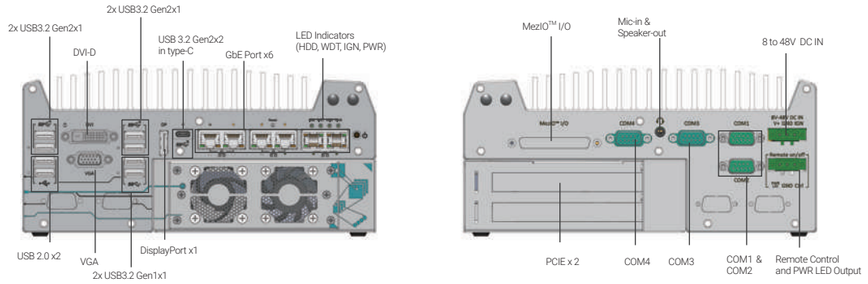
System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP)[1][2] - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	Supporting Intel® 13th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP)[1][2] - 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
Graphics	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)	
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet	5x 2.5G Ethernet by I225-IT and 1x Gigabit Ethernet by I219-LM with screw-lock	
PoE+	Optional IEEE 802.3at PoE+ PSE for Port 3 to Port 6. 100W total power budget	
USB 3.2	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	
USB 2.0	2x USB 2.0 ports	
Video Port (Integrated Graphics)	1x VGA connector, supporting 1920 x 1200 resolution 1x DVI-D connector, supporting 1920 x 1200 resolution 1x DisplayPort connector, supporting 4096 x 2304 resolution	
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/COM2) 2x RS-232 ports (COM3/COM4)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Storage Interface		
SATA HDD	2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1	
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD	
Expansion Bus		
PCI Express	2x PCIe x16 slot@Gen3, 8-lanes PCIe signal in Cassette for installing NVIDIA® L4 GPU and one additional PCIe card	

Expansion Bus	
Mini PCI Express	1x full-size mini PCI Express socket
M.2	1x M.2 3042/3052 B key socket with SIM slot for M.2 4G/ 5G module
Expandable I/O	1x MezIO™ expansion port for Neousys MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 48V DC input[1] 1x 3-pin pluggable terminal block for 24V DC input (UL series)
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 110.5 mm (H)
Weight	4.0kg
Mounting	Wall-mount (standard) or damping bracket (optional)
Environmental	
Operating Temperature	**With 35W CPU and NVIDIA® L4 GPU** -25°C to 60°C [3][4] **With 65W CPU and NVIDIA® L4 GPU** -25°C to 60°C[3][4] (configured as 35W TDP) -25°C to 50°C[3][4] (configured as 65W TDP)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4 (with optional damping bracket)
Shock	MIL-STD-810H, Method 516.8, Procedure I (with optional damping bracket)
EMC	CE/FCC Class A, according to EN 55032 & EN 55035
Safety	UL 62368-1, IEC 62368-1 (UL series only)

[1] A BIOS update may be required for the system to recognize 14th/13th-Gen processors. Please contact Neousys Technology for more information
[2] The system is designed to tolerant 8V to 48V voltage fluctuation. The minimal nominal voltage is required with different system configuration. For system with CPU and L4 GPU, 12V or above nominal DC voltage is recommended. For system with CPU, L4 GPU and additional PoE+ PD and/or high-watt PCIe card, 24V or above nominal DC voltage is recommended.
[3] For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
[4] 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.

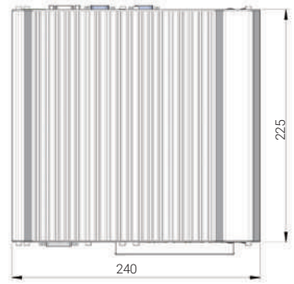
Last updated: 30 - Jul 2024

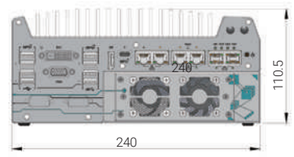
Appearance



Dimensions

Unit : mm





Ordering Information

Model No.	Product Description
Nuvo-9166GC	Ruggedized Edge AI Inference Computer supporting NVIDIA® L4 GPU and Intel® 14th/13th/12th-Gen Core™ processor with dual PCIe slots
Nuvo-9166GC-UL	Ruggedized Edge AI Inference Computer supporting NVIDIA® L4 GPU and Intel® 14th/13th/12th-Gen Core™ processor with dual PCIe slots & UL certified
PoE+ Option	Option of 802.3at PoE + PSE for 2.5GbE port 3 to port 6

Optional Accessories

Dmpbr-Nuvo9160	Neousys' patented damping brackets assembly for Nuvo-9160GC and Nuvo-9166GC
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.
PA-600W-ENC	600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.
MezIO® Modules	
MezIO®-C180-50	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
MezIO®-C181-50	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®-U4-50	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 *Only Nuvo-9166GC-PoE support MezIO-G4P*

Nuvo-7168GC Series

Ruggedized AI Inference Platform Supporting NVIDIA® RTX™ A2000 and Intel® 9th/ 8th-Gen Core™ Processor

Key Features

- **Supports NVIDIA® RTX™ A2000 GPU**
- **-25°C to 60°C wide-temperature operation**
- **Intel® 9th/ 8th-Gen Core™ hexa-core 35W/ 65W LGA1151 CPU**
- **6x GigE ports, 802.3at PoE+ option available (ports 3 to 6)**
- **M.2 2280 M key NVMe (Gen3 x4) socket for fast storage access**
- **4x USB 3.1 Gen2 ports and 4x USB 3.1 Gen1 ports**
- **Accommodates two 2.5" SATA HDD/ SSD with RAID 0/ 1 support**
- **MezIO® interface for easy function expansion**

CE FC

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

Introduction

Nuvo-7168GC series is a ruggedized AI inference platform supporting NVIDIA® RTX™ A2000 GPU which offers better longevity for industrial AI inference applications, such as machine vision inspection, machine automation, and intelligent video analytics. Operating with NVIDIA® RTX™ A2000, Nuvo-7168GC delivers 8 TFLOPS in FP32 GPU computing power for real-time AI inference.

Nuvo-7168GC inherits the market-proven passive cooling design for motherboard components; Neousys' patented Cassette module to segregate electrical and heat interferences; the innovative "tunneled " ventilation design for add-on cards that can efficiently dissipate the heat generated by RTX™ A2000, and together, they sustain optimum performance for both the CPU and GPU in high-temperature environments.

Nuvo-7168GC series offers an abundance of cutting-edge I/O connections. It has six GbE ports and eight USB3.1 ports for connecting to industrial cameras or IP cameras. An M.2 2280 NVMe interface is provided internally for fast storage access supporting over 2000 MB/s read/ write speeds. Moreover, Nuvo-7168GC supports Neousys' proprietary MezIO® interface for further I/O expansions such as isolated DIO, COM ports, or more GbE ports.

By supporting RTX™ A2000, Nuvo-7168GC series provides a great cost/ performance ratio for AI inference computing and superior system longevity so users need not worry about the frequent change of GPU configuration. Nuvo-7168GC is the ideal ruggedized AI inference platform for emerging industrial edge AI applications.

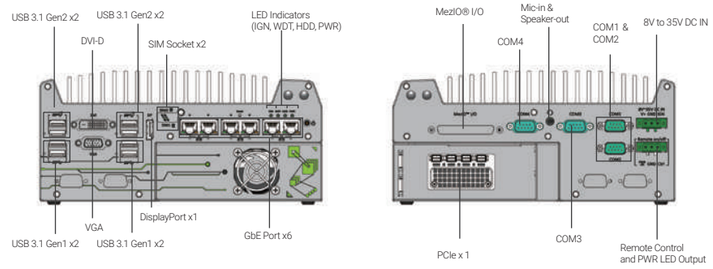
Specifications

System Core	
Processor	Supporting Intel® 9th/ 8th Gen Core™ CPU (LGA1151 socket, 65W/35W TDP) - Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T - Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T - Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T
Chipset	Intel® Q370 platform controller hub
Graphics	Integrated Intel® UHD graphics 630
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	6x Gigabit Ethernet ports by I219 and 5x I210
PoE+	Optional IEEE 802.3at PoE+ PSE for port 3 to port 6 100 W total power budget
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
Video Port (Integrated Graphics)	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA HDD	2x internal SATA ports for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen3 x4) for NVMe SSD installation
mSATA	1x full-size mSATA port (mux with mini-PCIe)

Internal Expansion Bus	
PCI/PCI Express	1x PCIe x16 slot@Gen3, 16-lanes PCIe signal in Cassette for installing RTX™ A2000 GPU
Mini PCI Express	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA)
M.2	1x M.2 2242 B key socket with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 - 35V DC input
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 111 mm (H)
Weight	4.5 Kg
Mounting	Wall-mount mounting bracket
Environmental	
Operating Temperature	with 35W CPU and RTX™ A2000 -25°C to 60°C ** with 65W CPU and RTX™ A2000 -25°C to 60°C */ ** (configured as 35W TDP mode) -25°C to 50°C */ ** (configured as 65W TDP mode)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

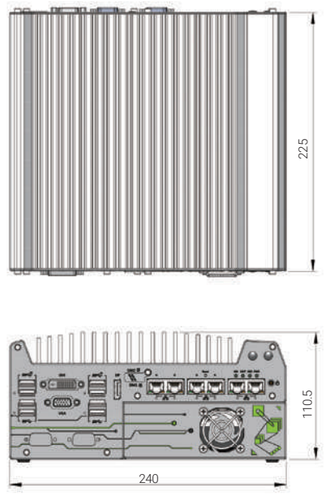
** For i7-9700E and i7-8700 running at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading applied. Users can configure CPU power in BIOS to obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-7168GC	Intel® 9th/ 8th-Gen Core™ AI Inference Platform with 6x GbE and MezIO®, supporting NVIDIA® RTX™ A2000
Optional IEEE 802.3at PoE+ for GbE ports 3 to 6	

Optional Accessories

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.
Damping bracket	Neousys' patented damping brackets assembly for Nuvo-7160GC/ Nuvo-7162GC/ Nuvo-7164GC/ Nuvo-7166GC/ 7168GC

MezIO® Modules

MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	***MezIO®-V20-EP***	MezIO® module with ignition power control function for in-vehicle application
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	***MezIO®-U4***	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	***MezIO®-G4***	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	***MezIO®-G4P***	MezIO® module with 4x IEEE 802.3at PoE+ ports

** Only Nuvo-7168GC-PoE support MezIO-G4P*

Nuvo-7164GC/ Nuvo-7166GC Series

Ruggedized GPU computing platform supporting an NVIDIA® L4/ T4/ A2 & Intel® 9th/ 8th-Gen Core™ processor

Key Features

- **Supports NVIDIA® L4/ T4/ A2 GPU**
- **One additional PCIe x16 slot for add-on card (Nuvo-7166GC only)**
- **Dedicated heat dissipation for -25°C to 60°C wide temperature operation**
- **Intel® 9th/ 8th-Gen Core™ hexa-core 35W/ 65W LGA1151 CPU**
- **6x GigE ports, 802.3at PoE+ option available (ports 3 to 6)**
- **M.2 2280 M key NVMe (Gen3 x4) socket for fast storage access**
- **4x USB 3.1 Gen2 ports and 4x USB 3.1 Gen1 ports**
- **Accommodates two 2.5" SATA HDD/ SSD with RAID 0/1 support**
- **MezIO® interface for easy function expansion**

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

Introduction

Nuvo-7164GC/Nuvo-7166GC series are ruggedized AI inference platforms designed for advanced inference acceleration applications such as voice, video, image and recommendation services. It supports an NVIDIA® L4/ T4/ A2 GPU to provide up to 242 TFLOPS in FP16 and 485 TOPs in INT8 for real-time inference based on trained neural network model. In addition, it supports Intel® 9th/ 8th-Gen Core™ 6-core/ 8-core CPU and 64 GB DDR4-2666, offering great balance between CPU, GPU and memory performance.

Thanks to Neousys' patented Cassette and air tunnel design, which guides the intake air to flow through the passive heat sink of NVIDIA® L4/ T4/ A2 making it capable of effectively dissipating the heat generated by the GPU. This promising design guarantees system operation of up to 60°C ambient temperature with sustained 100% GPU loading. What distinguishes Nuvo-7166GC from Nuvo-7164GC is that it has one additional PCIe x16 slot in the Cassette module for a second add-on card installation, making it that much more flexible for specific applications.

Both systems incorporate cutting-edge I/O technologies to boost overall system flexibility, functionality and performance. The systems feature an M.2 NVMe interface that supports disk read/ write speeds over 2000 MB/s and USB 3.1/ GbE ports for fast data transfer, such as acquiring HD video data. With the combination of a fast CPU and inference accelerator GPU, Nuvo-7164GC/ Nuvo-7166GC are ideal inference platforms for artificial intelligence applications.

Specifications

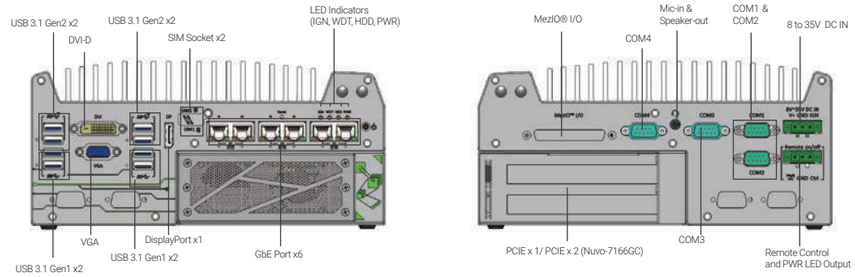
	Nuvo-7164GC	Nuvo-7166GC
System Core		
Processor	Supporting Intel® 9th/ 8th-Gen CPU (LGA1151 socket, 65W/ 35W TDP) - Intel® Core™ i7-8700/ i7-8700T/ i7-9700E/ i7-9700TE - Intel® Core™ i5-8500/ i5-8500T/ i5-9500E/ i5-9500TE - Intel® Core™ i3-8100/ i3-8100T/ i3-9100E/ i3-9100TE	
Chipset	Intel® Q370 platform controller hub	
Graphics	Integrated Intel® UHD graphics 630	
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)	
AMT	Supports AMT 12.0	
TPM	Supports TPM 2.0	
I/O Interface		
Ethernet	6x Gigabit Ethernet ports by I219 and 5x I210	
PoE+	Optional IEEE 802.3at PoE+ PSE for port 3 to port 6 100 W total power budget	
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports	
Video Port (Integrated Graphics)	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution	
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Storage Interface		
SATA HDD	2x internal SATA ports for 2.5" HDD/ SSD installation, supporting RAID 0/ 1	
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen3 x4) for NVMe SSD installation	
mSATA	1x full-size mSATA port (mux with mini-PCIe)	

	Nuvo-7164GC	Nuvo-7166GC
Internal Expansion Bus		
PCI/PCI Express	1x PCIe x16 slot@Gen3, 16-lanes PCIe signal in Cassette for installing NVIDIA® L4/ T4/ A2 GPU	2x PCIe x16 slot@Gen3, 8-lanes PCIe signal in Cassette for installing NVIDIA® L4/ T4/ A2 GPU and one additional PCIe card
Mini PCI Express	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA)	
M.2	1x M.2 2242 B key socket with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module	
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules	
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input	
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output	
Mechanical		
Dimension	240 mm (W) x 225 mm (D) x 111 mm (H)	
Weight	4.5 Kg (incl. CPU, GPU, memory and HDD)	
Mounting	Wall-mount (standard) or DIN-rail mount (optional)	
Environmental		
Operating Temperature	**with 35W CPU** -25°C to 60°C *** **with 65W CPU** -25°C to 60°C **/ *** (configured as 35W TDP mode) -25°C to 50°C **/ *** (configured as 65W TDP mode) In compliance with NVIDIA® L4/ T4/ A2 warranty policy, an operating temperature of 0°C to 50°C is required for systems with L4/ T4/ A2 installed	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90% , non-condensing	
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4	
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II	
EMC	CE/FCC Class A, according to EN 55032 & EN 55024	

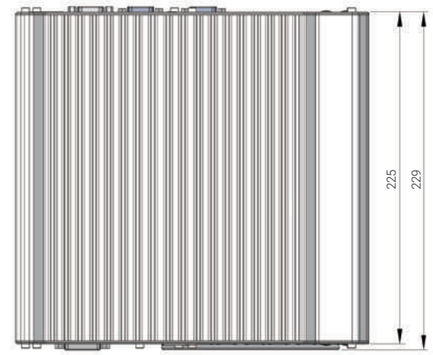
** For i7-9700E and i7-8700 running at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading applied. Users can configure CPU power in BIOS to obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Last updated: 30 - Jan 2024

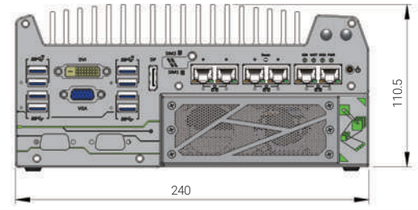
Appearance



Dimensions



Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-7164GC	Intel® 9th/ 8th-Gen Core™ AI Inference Platform with 6x GbE and MezIO™, supporting NVIDIA® L4/ T4/ A2 GPU
Nuvo-7166GC	Intel® 9th/ 8th-Gen Core™ AI Inference Platform with 6x GbE and MezIO™, supporting NVIDIA® L4/ T4/ A2 GPU and one additional PCIe x16 slot
Optional IEEE 802.3at PoE+ for GbE ports 3 to 6	

Optional Accessories

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.		
Damping bracket	Neousys' patented damping brackets assembly for Nuvo-7160GC/ Nuvo-7164GC/ Nuvo-7166GC		
MezIO® Modules			
MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	***MezIO-V20-EP***	MezIO® module with ignition power control function for in-vehicle application
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	***MezIO-U4***	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	***MezIO-G4***	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	***MezIO-G4P***	MezIO® module with 4x IEEE 802.3at PoE ports

Only Nuvo-7164GC-PoE and Nuvo-7166GC-PoE support MezIO-G4P

Nuvo-7160GC Series

Ruggedized GPU-Computing Platform Supporting 120W NVIDIA® GPU and Intel® 9th/8th-Gen Core™ Processor

CE FC

Key Features

- **Supports NVIDIA® GPU graphics card up to 120W TDP**
- **Patented thermal design to allow -25°C to 60°C* wide temperature operation**
- **Intel® 9th/ 8th-Gen Core™ hexa-core 65W/ 35W LGA1151 CPU**
- **6x GigE ports, supporting 9.5 KB jumbo frame**
- **M.2 2280 M key socket (Gen3 x4) supporting NVMe SSD or Intel®Optane™ memory**
- **4x USB 3.1 Gen2 ports and 4x USB 3.1 Gen1 ports**
- **Accommodates two 2.5" SATA HDD/ SSD with RAID 0/ 1 support**
- **Compatible with MezIO® interface for function expansion**
- **Patented ventilation design* for graphics card**

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

Introduction

Nuvo-7160GC is a ruggedized GPU-aided edge computer designed for modern machine learning applications such as autonomous driving, facial recognition and machine vision. It supports up to a 120W GPU, delivering 4 to 6 TFLOPS computing power for inference, as well as Intel® 9th/ 8th-Gen Core™ 6-core/ 8-core CPU, offering up to 50% CPU performance enhancement over previous generations.

Thanks to Neousys' patented Cassette design and ingenious ventilation mechanism, Nuvo-7160GC can effectively dissipate the heat generated by the GPU. By introducing the guided airflow from intake to exhaust with powerful fans featuring smart fan control, it allows a 120W GPU to operate at 60°C ambient temperature under 100% GPU loading.

Nuvo-7160GC incorporates rich I/O functions such as USB 3.1 Gen2/ Gen1, GbE, COM and MezIO® interface in its restricted footprint. It also leverages cutting-edge M.2 NVMe SSD technology for over 2000MB/s disk read/ write speed or Intel® Optane™ memory for the ultimate system acceleration. Neousys Nuvo-7160GC is the ideal solution for emerging edge computing by combining exceptional CPU and GPU performances.

Specifications

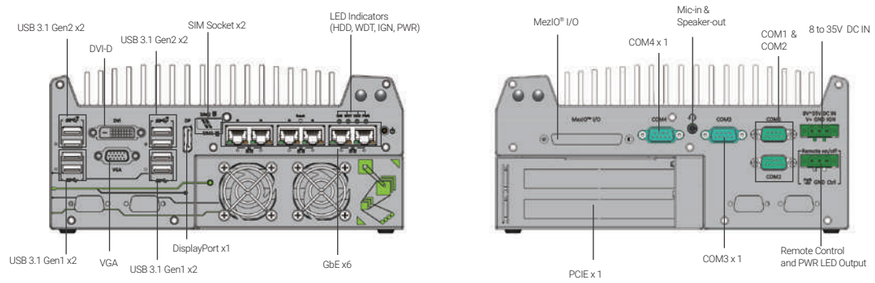
System Core	
Processor	Supporting Intel® 9th/ 8th-Gen CPU (LGA1151 socket, 65W/ 35W TDP) - Intel® Core™ i7-8700/ i7-8700T/ i7-9700E/ i7-9700TE - Intel® Core™ i5-8500/ i5-8500T/ i5-9500E/ i5-9500TE - Intel® Core™ i3-8100/ i3-8100T/ i3-9100E/ i3-9100TE
Chipset	Intel® Q370 platform controller hub
Graphics	Integrated Intel® UHD graphics 630
Memory	Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	6x Gigabit Ethernet ports by I219 and 5x I210
PoE+	Optional IEEE 802.3at PoE+ PSE for Port 3 to Port 6 100 W total power budget
USB 3.1	4x USB 3.1 Gen2 (10 Gbps) ports 4x USB 3.1 Gen1 (5 Gbps) ports
Video Port (Integrated Graphics)	1x VGA , supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/422/485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA HDD	2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation
mSATA	1x full-size mSATA port (mux with mini-PCIe)

Internal Expansion Bus	
PCI/PCI Express	1x PCIe x16 slot@Gen3, 16-lanes PCIe signals in Cassette for installing an NVIDIA® graphics card up to 120W TDP (Max. graphics card dimension is 188 mm(L) x 121 mm(W), dual slot allocation)
Mini PCI Express	1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA)
M.2	1x M.2 2242 B key socket with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module
Expandable I/O	1x MezIO® expansion port for Neousys MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Mechanical	
Dimension	240 mm (W) x 225 mm (D) x 111 mm (H)
Weight	4.5 Kg
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	**With 35W CPU and 120W GPU** -25°C to 60°C ** **With 65W CPU and 120W GPU** -25°C to 60°C **/*** (configured as 35W TDP) -25°C to 50°C **/*** (configured as 65W TDP)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
Safety	EN62368-1
EMC	CE/FCC Class A, according to EN 55032 & EN 55024

** For i7-9700E and i7-8700 running 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 obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

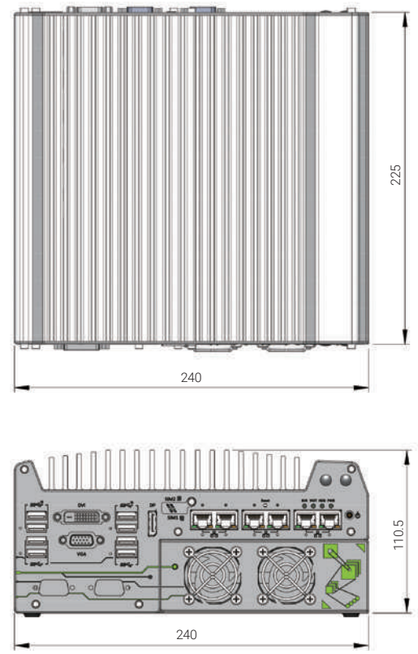
Last updated: 22 - Dec 2020

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-7160GC	Intel® 9th/8th-Gen Core™ GPU-computing platform with 6x GbE and MezIO® interface, supporting selected NVIDIA® 120W GPU
Optional IEEE 802.3at PoE+ for GbE ports 3 to 6	

Optional Accessories

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.		
Damping bracket	Neousys' patented damping brackets assembly for Nuvo-7160GC/ Nuvo-7164GC		
MezIO® Modules			
MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	***MezIO-V20-EP***	MezIO® module with ignition power control function for in-vehicle application
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	***MezIO-U4***	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	***MezIO-G4***	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	***MezIO-G4P***	MezIO® module with 4x IEEE 802.3at PoE ports

Only Nuvo-7160GC-PoE support MezIO-G4P

Nuvo-5095GC Series

Compact and Wide Temperature GPU-Computing Platform
Supporting 75W NVIDIA® GPU and Intel® 6th-Gen Core™ Processor

CE FC

Key Features

- **Supports NVIDIA® GPU with up to 75W TDP**
- **Patented thermal design to allow -25°C to 60°C Wide temperature system operation**
- **Supports Intel® 6th-Gen Core™ i7/i5 LGA1151 CPU**
- **6x GigE ports, supporting 9.5 KB jumbo frame**
- **Up to 32 GB, DDR4-2133 SODIMM**
- **240 x 225 x 111 mm compact footprint**
- **Compatible with MezIO® interface for function expansion**
- **Accommodates two 2.5" SATA HDD/ SSD with RAID 0/1 support**
- **Patented ventilation* for graphics card**

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

Introduction

Nuvo-5095GC opens a new chapter for industrial computers. As the first embedded controller targeted at emerging applications of CUDA computing, autopilot, deep learning and virtual reality, Nuvo-5095GC integrates all features required for a compact, reliable and powerful GPU computing platform.

Supporting 75W NVIDIA® GPU (e.g. GTX 1050 Ti), Nuvo-5095GC possesses 768 CUDA cores to deliver tremendous computing power for arithmetic/ graphics operations. Neousys' patented Cassette technology and innovative thermal design help to effectively dissipate the heat generated by the GPU, thus making this compact system capable of operating reliably at 60°C with 100% GPU loading.

Nuvo-5095GC is based on Intel® Skylake platform that supports 35W/ 65W 6th-Gen Core™ processors and up to 32GB DDR4 memory. It offers rich I/O functions, such as GbE, USB 3.1 and COM ports to connect to external devices. All these extraordinary features are integrated into a very compact, 240 x 225 x 111 mm footprint. For fast-growing GPU-computing applications, Nuvo-5095GC presents the first industrial-grade, compact and rugged platform incorporating CPU and GPU to offer performance far beyond traditional industrial computers.

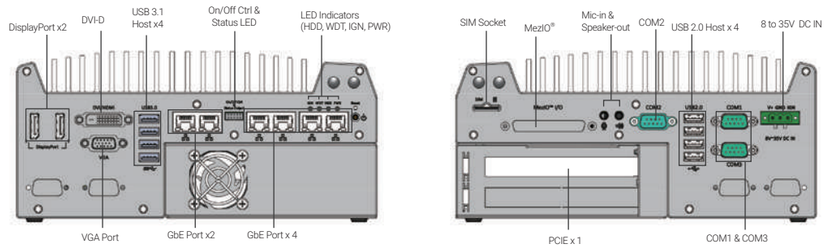
Specifications

System Core	
Processor	Supports Intel® 6th-Gen Core™ LGA1151 CPU - Intel® Core™ i7-6700 (8M Cache,3.4/4.0 GHz, 65W TDP) - Intel® Core™ i5-6500 (6M Cache, 3.2/3.6 GHz, 65W TDP) - Intel® Core™ i7-6700TE (8M Cache, 2.4/3.4 GHz, 35W TDP) - Intel® Core™ i5-6500TE (6M Cache, 2.3/3.3 GHz, 35W TDP)
Chipset	Intel® Q170 platform controller hub
Graphics	Independent NVIDIA® GPU (75W TDP) or integrated Intel® HD 530/510 controller
Memory	Up to 32 GB DDR4-2133 SDRAM (two SODIMM slots)
AMT	Supports AMT 11.0
TPM	Supports TPM 2.0
I/O Interface	
Ethernet	6x Gigabit Ethernet ports by Intel® 1x I219 and 5x I210
PoE+	Optional IEEE 802.3at PoE+ PSE for GbE Port 3 to Port 6, 80 W total power budget
USB 3.1	4x USB 3.1 ports via native XHCI controller
USB 2.0	4x USB 2.0 ports
Video Port (Integrated Graphics)	1x stacked VGA + DVI-D 2x DisplayPorts, supporting 4K2K resolution
Serial Port	2x software-programmable RS-232/422/485 port (COM1 & COM3) 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 PCIe x16 slot @ Gen3, 8-lanes PCIe signals in Cassette for installing 75W NVIDIA® GPU

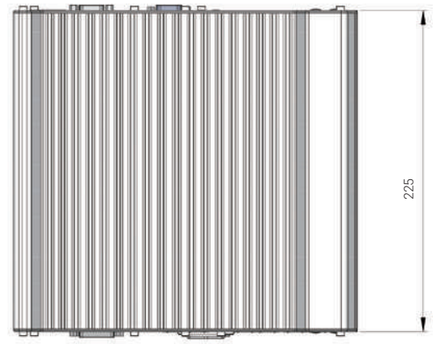
Expansion Bus	
Mini PCI-E	1x internal mini PCI Express socket with front-accessible SIM socket 1x internal mini PCI Express socket with internal SIM socket (mux with mSATA)
Expandable I/O	1x MezIO® expansion port for Neousys' MezIO® modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V 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, GPU, memory and HDD)
Mounting	Wall-mount (standard) or DIN-rail mount (optional)
Environmental	
Operating Temperature	with **i7-6700TE**, **i5-6500TE** (35W TDP) -25°C to 60°C ** with **i7-6700**, **i5-6500** (65W TDP) -25°C to 60°C **/***** (configured as 35W CPU mode) -25°C to 50°C **/***** (configured as 65W CPU mode)
Storage Temperature	-40°C to 85°C
Humidity	10% to 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 & EN 55032

** For i7-6700 running 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 obtain higher operating temperature.*
*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

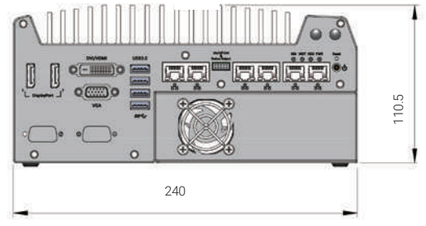
Appearance



Dimensions



Unit : mm



Ordering Information

Model No.	Product Description
Nuvo-5095GC	Intel® 6th-Gen Core™ GPU-computing platform with 6x GbE and MezIO™ interface, supporting selected 75W NVIDIA® GPU
Optional IEEE 802.3at PoE+ for GbE ports 3 to 6	

Optional Accessories

PA-160W-OW	160W AC/DC power adapter 20V/8A;18AWGx4C/120cm, cord end terminals for terminal block, operating temperature : -30 to 70 °C.		
MezIO® Modules			
MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports	*MezIO-V20-EP*	MezIO® module with ignition power control function for in-vehicle application
MezIO®-C181	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports	*MezIO-U4*	MezIO® module with 4x USB 3.1 ports
MezIO®-D220	MezIO® module with 8-CH isolated digital input and 8-CH isolated digital output	*MezIO-G4*	MezIO® module with 4x GigE ports
MezIO®-D230	MezIO® module with 16-CH isolated digital input and 16-CH isolated digital output	*MezIO-G4P*	MezIO® module with 4x IEEE 802.3at PoE ports

Only Nuvo-5095GC-PoE supports MezIO-G4P

NVIDIA® Jetson Rugged Computer

NRU-220S/ NRU-222S

NVIDIA® Jetson AGX Orin™ AI NVR for Intelligent Video Analytics

Key Features

- **Powered by NVIDIA® Jetson AGX Orin™ SoM bundled with JetPack 5.1.1**
  Powered by NVIDIA® Jetson AGX Orin™ Industrial bundled with JetPack 6.0
- **Rugged -25°C to 70°C fanless operation (JAO32/ JAO64)**
  - No throttling at 65°C with JAO64 MAXN Mode
  Rugged -40°C to 75°C fanless operation (JAOi)
  - No throttling at 75°C with JAOi 35W Mode
- **2x 2.5 Gigabit Ethernet + 4x IEEE 802.3at Gigabit PoE+ ports**
- **2x front-accessible 2.5" SSD trays**
- **1x M.2 2280 M key socket for NVMe SSD**
- **2x mini-PCIe sockets for WiFi/ GNSS/ NVMe/ CAN modules**
- **1x 3042/ 3052 M.2 B key socket for 4G/5G mobile communication**
- **1x isolated RS-485 and 2x RS232 ports**
- **8V to 48V wide-range DC input with built-in ignition power control**

Introduction

NRU-220S series is a one-stop AI NVR real-time inference and video transcoder powered by NVIDIA® Jetson AGX Orin. Its fanless design and wide-temperature operation capability makes it ideal for stationary or mobile deployment applications.

Powered by NVIDIA® Jetson AGX Orin™ 32GB/ 64GB system-on-module (SOM), it comprises an Ampere GPU with up to 2048 CUDA cores, 64 Tensor cores, 2x NVDLA 2.0 Engines that offer a total of 275 sparse TOPS (INT8) AI inference and video transcoding capability of up to twenty-two 1080P video streams simultaneously.

NRU-220S offers four 802.3at PoE+ ports sharing 1 Gigabit bandwidth; each port can supply up to 25.5W of power to IP cameras. The additional two 2.5GbE ports is ideal for surveillance applications requiring more IP camera connections, or higher bandwidth connections to the backend. In addition to 64GB eMMC on the Orin module and an M.2 2280 NVMe socket for fast SSD read/write, NRU-220S is equipped with two front-accessible 2.5" SSD trays for storage expansion. It also has two mini-PCIe sockets for CAN/ COM/ WiFi modules and one M.2 B key socket for 4G LTE/5G NR mobile communications.

In addition to the above mentioned connectivity, the system also includes a wide range of NVIDIA AI tools, and modern deep learning frameworks. NRU-220S brings real-time video inference to the edge for surveillance, predictive maintenance, and intelligent transportation system (ITS) applications. Furthermore, with Neousys' unique damping bracket design, ignition power control, and 8-48V wide-range DC power input, NRU-220S is also ideal for in-vehicle deployment. Last but not least, NRU-220S comes with a derivative model, NRU-222S, incorporating M12 connectors for applications in shock and vibration environments that require extreme rugged connections, such as for agriculture, construction, and mining machinery.

NRU-220S series is Neousys' response to edge AI performance demands in a compact form factor with fanless wide-temperature operation.

Specifications

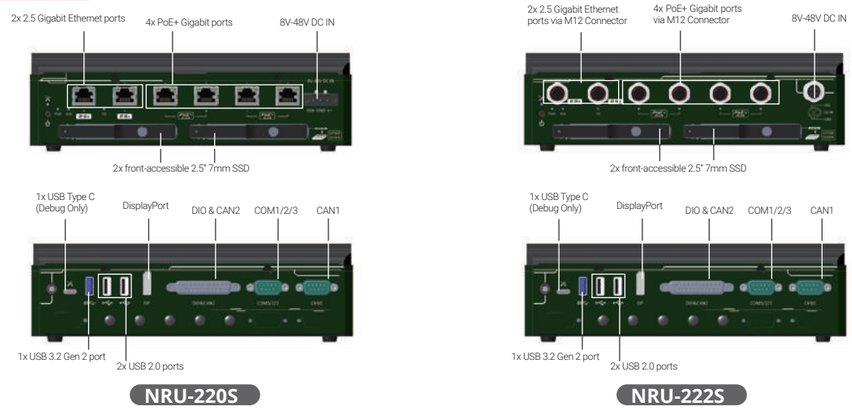
	NRU-220S	NRU-222S
System Core		
Processor	Supporting NVIDIA® Jetson AGX Orin™ System-on-Module (SOM), comprising NVIDIA® Ampere GPU and Arm Cortex-A78AE CPU	
Memory	32GB/ 64GB LPDDR5 (AGX Orin 32GB/ 64GB) @ 3200 MHz on SOM	
eMMC	64GB eMMC 5.1 on SOM	
Panel I/O Interface		
Ethernet Port	6x RJ45 with screw-lock	6x M12 X-coded 8-pin
	Port 1, Port 2: 2.5 Gigabit Ethernet ports by Intel® I225 Port 3 ~ Port 6: Gigabit ports, share 1 Gbps total bandwidth	
PoE Capability	IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6, 100W total power budget	
USB	1x USB 3.2 Gen2 port 2x USB 2.0 ports 1x USB Type C (Debug Only)	
Video Port	1x DisplayPort, supporting 3840x2160 at 60Hz	
Serial Port	1x Isolated RS-485 port and 2x RS-232 ports	
CAN bus	2x CAN 2.0 ports	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	
Internal I/O Interface		
Mini PCI Express	1x full-size mini PCI Express socket (PCIe + USB 2.0) for WiFi 6 or CAN 1x full-size mini PCI Express socket (USB 2.0) for GNSS or 4G LTE	
M.2	1x M.2 3042/3052 B key (USB 3.1 Gen 1 + USB 2.0) for LTE/5G module with dual micro SIM support	
Storage		
SATA HDD	2x front-accessible 2.5" 7mm SSD	
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen4x4) for NVMe SSD	

	NRU-220S	NRU-222S
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8V to 48V DC input and ignition power control (IGN/ GND/ V+)	1x M12 A-coded 5-pin for 8V to 48V DC input and ignition power control (IGN/ GND/ V+)*
Mechanical		
System LED	PWR: System carrier board power status OS: Jetson OS boot status IGN: Ignition power signal	
Dimension	230 mm (W) x 173 mm (D) x 66 mm (H)	
Weight	2.6 kg (excluding the damping bracket)	
Mounting	Wall-mount with the damping bracket	
Environmental		
Operating Temperature	-25°C ~ 70°C with passive cooling (30W TDP mode on JAO32/ JAO64) ** -40°C ~ 75°C with passive cooling (35W TDP mode on JAOi) **	
Storage Temperature	-40°C ~ 85°C	
Humidity	10% ~ 90%, non-condensing	
Vibration	Operating, MIL-STD-810H, Method 514.8, Category 4	IEC61373:2010, Category 1, Class B Body Mounted (part of EN 50155)
Shock	Operating, MIL-STD-810H, Method 516.8, Procedure I	IEC61373:2010, Category 1, Class B Body Mounted (part of EN 50155)
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035 EN 50121-3 (EN 50155:2017, Clause 13.4.8)	CE/ FCC Class A, according to EN 55032 & EN 55035 EN 50121-3 (EN 50155:2017, Clause 13.4.8)

** Due to the M12 DC input current limit, the allowable DC input range of the NRU-222S varies based on the system load: System load under 60W, the required DC input range is 8V to 48V*
System load between 60W to 160W, the required DC input range is 20V to 48V
*** For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

Last updated: 11 - Sep 2024

Appearance



Dimensions

Unit : mm

Ordering Information

Model No.	Product Description
NRU-220S-JAO32	NVIDIA® Jetson AGX Orin™ (32GB) AI NVR for Intelligent Video Analytics with RJ45 Ethernet
NRU-220S-JAO64	NVIDIA® Jetson AGX Orin™ (64GB) AI NVR for Intelligent Video Analytics with RJ45 Ethernet
NRU-220S-JAOi	NVIDIA® Jetson AGX Orin™ Industrial AI NVR for Intelligent Video Analytics with RJ45 Ethernet
NRU-222S-JAO32	NVIDIA® Jetson AGX Orin™ (32GB) AI NVR for Intelligent Video Analytics with M12 Ethernet
NRU-222S-JAO64	NVIDIA® Jetson AGX Orin™ (64GB) AI NVR for Intelligent Video Analytics with M12 Ethernet
NRU-222S-JAOi	NVIDIA® Jetson AGX Orin™ Industrial AI NVR for Intelligent Video Analytics with M12 Ethernet

Optional Accessories

PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
AccsyBx-FAN-NRU-100	Fan kit with 92mm x 92mm fan for NRU-220S series

NRU-230V-AWP/ NRU-240S-AWP Series

IP66 Waterproof NVIDIA® Jetson AGX Orin™ Computer with 8x GMSL2, 4x PoE+ GbE, and 1x 10GbE Ports

CE FC

Key Features

- **Powered by NVIDIA® Jetson AGX Orin™ SoM bundled with JetPack 5.1.1**
  Powered by NVIDIA® Jetson AGX Orin™ Industrial bundled with JetPack 6.0
- **Rugged -25°C to 70°C fanless operation (JAO32/ JAO64)**
  - No throttling at 55°C with JAO64 MAXN Mode
  Rugged -40°C to 75°C fanless operation (JAOi)
  - No throttling at 50°C with JAOi MAXN Mode
- **IP66 waterproof and dustproof**
- **Support 8x GMSL2 automotive cameras via FAKRA Z connectors** (NRU-230V-AWP)
- **4x PoE+ GbE and 1x 10GBASE-T via M12 X-coded connectors**
- **2x isolated CAN 2.0, 1x RS232, and 1x isolated RS485 via M12 A-coded connectors**
- **1x system monitoring port by automotive-grade MCU**
- **8V to 48V wide-range DC input with built-in ignition power control**

Introduction

NRU-230V-AWP is a rugged, IP66 waterproof NVIDIA® Jetson AGX Orin™ computer targeting edge AI applications for harsh environments, ranging from roadside, food & chemical factories, mining, construction, agriculture, or harbor. It aims to redefine rugged Edge AI with waterproof features at an affordable cost through its streamlined mechanical design, standardized cable kit, and carefully selected waterproof connectors.

Powered by NVIDIA® Jetson AGX Orin™, NRU-230V-AWP offers up to 275 sparse TOPS (INT8) AI inference and can transcode up to twenty-two 1080P video streams simultaneously. To meet versatile camera requirements for vision-based AI applications, NRU-230V-AWP not only offers 4x waterproof M12 PoE+ GbE ports for industrial GigE cameras or IP cameras, but it also provides 8x waterproof GMSL2 FAKRA ports for automotive cameras or industrial stereo cameras. Additionally, the waterproof Type-C connector provides 4K DisplayPort output for ADAS applications involving real-time surround-view awareness. A waterproof 10GbE port is also provided for high-speed data communication.

For in-vehicle deployment, NRU-230V-AWP is equipped with an 8V to 48V wide DC input range, ignition power control, 2x isolated CAN bus ports, 1x RS232 port, and 1x isolated RS485 port. It also features two mini-PCIe sockets for CAN/ COM/ WiFi modules and one M.2 B-key socket for 4G LTE/ 5G NR mobile communication module. In terms of storage, NRU-230V-AWP comes with 64GB eMMC on the Orin™ module and an M.2 2280 NVMe socket for fast SSD read/write speeds, along with two internal 2.5" SSD slots for storage expansion. Lastly, NRU-230V-AWP comes with a system monitoring port to report the latest power, thermal, and Jetson status via an onboard automotive-grade MCU for potential functional safety system design.

The integration of IP66 waterproof capability, AGX Orin AI performance, and rich onboard IO strikes a sweet spot between ruggedness, performance, and cost. It is an ideal waterproof edge AI platform for industrial vehicles, outdoor AMR, edge inspection, and roadside.

Specifications

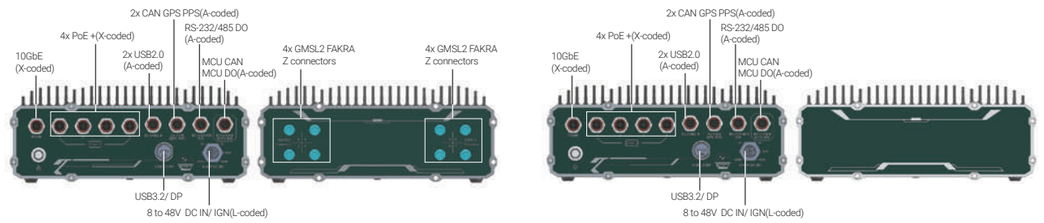
	NRU-230V-AWP	NRU-240S-AWP
System Core		
Processor	NVIDIA® Jetson AGX Orin™ system-on-module (SOM), comprising NVIDIA® Ampere GPU and Arm Cortex-A78AE CPU	
Memory	32GB/ 64GB LPDDR5 (JAO 32GB/ JAO 64GB) @ 3200 MHz on SOM	
eMMC	64GB eMMC 5.1 on SOM	
Panel I/O Interface		
GMSL Camera	8x GMSL2 FAKRA Z connectors Configuration A. 8x AC-IMX390 (2MP@30FPS) Configuration B. 8x AC-ISX031 (3MP@30FPS) Configuration C. 8x AC-IMX490 (5MP@30FPS)	-
Ethernet Port	Port 1 to Port 4: 4x Gigabit Ethernet ports by Intel® I350 via M12 X-coded 8-pin connector Port 5: 1x 10 Gigabit Ethernet port via M12 X-coded 8-pin connector	
PoE Capability	IEEE 802.3at PoE+ PSE for Port 1 to Port 4, 100 W total power budget	
USB 2.0	2x USB 2.0 ports via M12 A-coded 8-pin connector	
USB 3.2 + Video Port	1x waterproof USB Type C (USB 3.2 Gen1 and 1x DisplayPort, supporting 3840x2160 at 60Hz)	
Serial Port + DO	1x isolated RS-485, 1x RS-232, and 1x isolated DO via M12 A-coded 8-pin connector	
CAN Bus + DI	2x isolated CAN 2.0, and 1x isolated DI (GPS PPS input) via M12 A-coded 8-pin connector	
System Monitoring	1x isolated CAN 2.0 port and 1x isolated DO via M12 A-coded 8-pin connector by automotive-grade MCU	
Internal I/O Interface		
Mini PCI Express	1x full-size mini PCI Express socket (PCIe + USB 2.0) for WiFi 6 or CAN 1x full-size mini PCI Express socket (USB 2.0) for GNSS or 4G LTE	
M.2	1x M.2 3042/ 3052 B key (USB 3.1 Gen 1 + USB 2.0) for LTE/ 5G module with dual micro SIM support	
Storage		
SATA HDD	2x internal SATA ports for 2.5" SSD installation	
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen4x2) for NVMe SSD	

	NRU-230V-AWP	NRU-240S-AWP
Power Supply		
DC Input	8V to 48V DC input and ignition power control via M12 L-coded, 5-pin connector[1]	
Mechanical		
Dimension	225 mm (W) x 194 mm (D) x 88.5 mm (H) (without rubber feet) 225 mm (W) x 194 mm (D) x 89.5 mm (H) (with rubber feet)	
Weight	4.4kg (excluding wall-mount bracket)	
Mounting	Wall-mount bracket (standard)	
Environmental		
Operating Temperature	**Operating Temperature** **-25°C to 70°C** (JAO32 or JAO64 30W TDP mode, without 10GbE transmission and PoE Load) [2] **-25°C to 60°C** (JAO32 or JAO64 30W TDP mode, with full function) **-40°C to 70°C** (JAOi 35W TDP mode, without 10GbE transmission and PoE Load) [2] **-40°C to 60°C** (JAOi 35W TDP mode, with full function) **With full CPU+GPU stressing:** 1. NRU-230V-AWP non-throttling at 65C with 30W TDP mode 2. NRU-230V-AWP non-throttling at 55C with 60W TDP mode (JAO64 MAXN) 3. NRU-230V-AWP non-throttling at 50C with 75W TDP mode (JAOi MAXN)	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90%, non-condensing	
Vibration	MIL-STD-810H, Method 514.8, Category 4	
Shock	MIL-STD-810H, Method 516.8, Procedure I	
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035 EN 50121-3 (EN 50155:2017, Clause 13.4.8)	

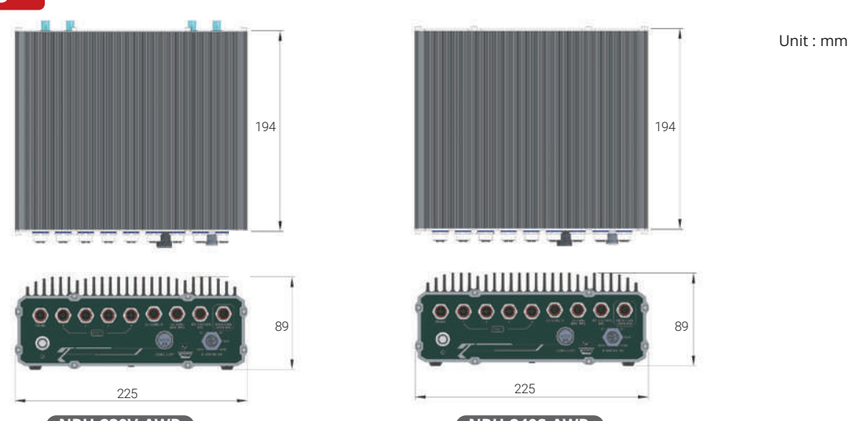
[1]The maximum current of each pin is 16A.
[2]For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.

Last updated: 1 - Nov 2024

Appearance



Dimensions



Unit : mm

Ordering Information

Model No.	Product Description
NRU-230V-AWP-JAO32	IP66 Waterproof NVIDIA® Jetson AGX Orin™ (32GB) Computer with 8x GMSL2, 4x PoE+ GbE ports
NRU-230V-AWP-JAO64	IP66 Waterproof NVIDIA® Jetson AGX Orin™ (64GB) Computer with 8x GMSL2, 4x PoE+ GbE ports
NRU-230V-AWP-JAOi	IP66 Waterproof NVIDIA® Jetson AGX Orin™ Industrial Computer with 8x GMSL2, 4x PoE+ GbE ports
NRU-240S-AWP-JAO32	IP66 Waterproof NVIDIA® Jetson AGX Orin™ (32GB) Computer with 4x PoE+ GbE ports
NRU-240S-AWP-JAO64	IP66 Waterproof NVIDIA® Jetson AGX Orin™ (64GB) Computer with 4x PoE+ GbE ports
NRU-240S-AWP-JAOi	IP66 Waterproof NVIDIA® Jetson AGX Orin™ Industrial Computer with 4x PoE+ GbE ports

Optional Accessories

PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
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.
AC-IMX390-H60	Sony IMX390 CMOS sensor camera; 1920x1080 @30fps; LFM; HFOV 63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H120	Sony IMX390 CMOS sensor camera; 1920x1080 @30fps; LFM; HFOV 120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H190	Sony IMX390 CMOS sensor camera; 1920x1080 @30fps; LFM; HFOV 186°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H60	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H120	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H190	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H195.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H30	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 30.0°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H60	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 62.5°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H120	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 120°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap

NRU-170-PPC Series

IP66 Waterproof 10.1" AI Panel PC Powered by NVIDIA® Jetson Orin™ NX/ Nano with 6x GMSL2 or 4x PoE+ GbE Ports

Key Features

- **Powered by NVIDIA® Orin™ NX or Orin™ Nano SoM bundled with JetPack**
- **IP66 waterproof and dustproof**
- **10.1" touchscreen with 1920 x 1200 resolution, 1000 cd/m2 brightness, 1000:1 high contrast ratio**
- **-25°C to 60°C fanless operation** (No throttling at 60°C with MAXN TDP Mode)
- **6x GMSL2 automotive cameras via FAKRA Z connectors** (NRU-171V-PPC)
- **4x PoE+ GbE via M12 X-coded connectors** (NRU-172S-PPC)
- **1x CAN FD and 1x RS232 via M12 A-coded connectors**
- **8V to 35V wide-range DC input with built-in ignition power control**

Introduction

The NRU-170-PPC series is an IP66-rated, 10.1" AI panel PC, powered by NVIDIA® Jetson Orin™ NX or Orin™ Nano, delivering up to 100 TOPS of AI processing capability. This series is tailored for edge AI applications that demand water resistance and human-machine interaction, including ADAS for off-highway vehicles, autonomous marine vessels, AI-driven inspection in food processing, smart livestock management, and precision agriculture.

Leveraging the NVIDIA® Jetson Orin™ NX, the NRU-170-PPC achieves superior AI inference, offering up to 100 sparse TOPS (INT8) and the ability to transcode up to 18 simultaneous 1080P video streams. The series also incorporates waterproof features at a competitive price point, accomplished through a refined mechanical design, the use of carefully selected waterproof connectors, and standardized cable kits. For adaptability in various semi-outdoor environments, the unit is equipped with a 10.1" touch panel boasting 1000 cd/m^2 brightness and a 1000:1 contrast ratio, with the added functionality of single-finger touch sensitivity in wet conditions.

The NRU-170-PPC series includes two models: the NRU-171V-PPC, supporting up to six GMSL2 automotive cameras with pre-integrated drivers for select cameras utilizing IMX390, ISX031, and IMX490 CMOS sensors; and the NRU-172S-PPC, which offers four PoE+ GbE ports for IP or industrial GigE cameras. Additionally, a waterproof GbE port is provided for interfacing with external computers or LiDAR. The NRU-170-PPC is designed as a compact, all-in-one edge AI platform that simplifies in-vehicle cabling. It supports an 8V to 35V wide-range DC input, ignition power control, a CAN FD bus port, and an RS232 port. Expansion options include a mini-PCIe socket for CAN/ COM/ WiFi modules and an M.2 B-key socket for 4G LTE/ 5G NR communication modules.

By integrating a 10.1" touch panel, IP66 rating, Orin NX AI performance, and comprehensive onboard camera connectivity, the NRU-170-PPC strikes an optimal balance between ruggedness, performance, cost efficiency, and ease of deployment. It represents a cutting-edge edge AI solution for applications in smart agriculture, mining, construction, smart animal husbandry, edge inspection, and outdoor autonomous mobile robots (AMRs).

Specifications

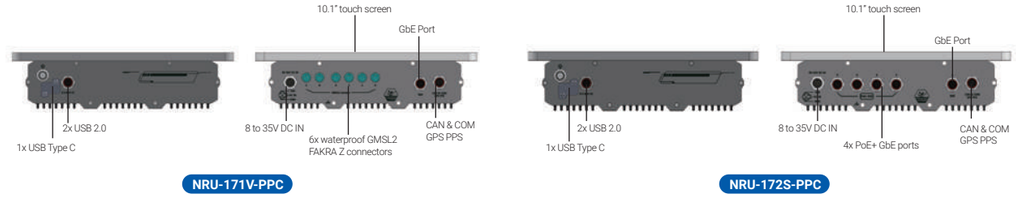
System Core		
Processor	NVIDIA® Jetson Orin™ NX system-on-module (SOM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU	NVIDIA® Jetson Orin™ Nano system-on-module (SOM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU
Memory	16GB/ 8GB LPDDR5 @ 3200 MHz on SOM	8GB/ 4GB LPDDR5 @ 2133 MHz on SOM
eMMC	N/A	
Touch Panel		
Panel	10.1" screen with a 1920x1200 resolution, 1000 cd/m² brightness, and a high 1000:1 contrast ratio	
Touch	Single-finger touch functionality when the screen is wet, with optical bonding, AG (Anti-Glare) and AF (Anti-Fingerprint) glass treatment	
Panel I/O Interface		
GMSL2	**NRU-171V-PPC** 6x waterproof GMSL2 FAKRA Z connectors, supporting multiple configurations: Configuration A. 6x AC-IMX390 (2MP@30FPS) Configuration B. 6x AC-ISX031 (3MP@30FPS) Configuration C. 4x AC-IMX490 (5MP@30FPS)	
Ethernet Port	**NRU-171V-PPC** 1x Gigabit Ethernet port via M12 X-coded 8-pin connector **NRU-172S-PPC** Port 0: 1x Gigabit Ethernet port via M12 X-coded 8-pin connector Port 1 to Port 4: 4x GbE ports by Intel® I350-AM4 via M12 X-coded 8-pin connector	
PoE+	**NRU-172S-PPC** IEEE 802.3at PoE+ PSE for Port 1 to Port 4 with 50W total power budget	
USB	2x USB 2.0 ports via M12 A-coded 8-pin connector 1x USB Type C port (for system flashing and OTG, under service door)	
Serial Port	1x RS-232 port via M12 A-coded 8-pin connector	
CAN bus	1x CAN FD port via M12 A-coded 8-pin connector	
Isolated DIO	1x isolated GPS PPS input via M12 A-coded 8-pin connector	

Internal I/O Interface	
Mini PCI Express	1x full-size mini PCI Express socket (PCIe + USB 2.0)
M.2	1x M.2 3042/3052 B key (USB 3.2 Gen 1 + USB 2.0) for LTE/5G module with dual micro SIM support
Storage	
M.2 NVMe	1x M.2 2242 M key socket (PCIe Gen 3x1) for NVMe SSD
Power Supply	
DC Input	8V to 35V DC input and ignition power control via M12 A-coded, 5-pin connector (IGN/ GND/ V+)[1]
Mechanical	
Dimension	257 mm (W) x 65 mm (D) x 176 mm (H)
Weight	3.8 kg
Mounting	VESA 75 mount (standard)
Environmental	
Operating Temperature	-25°C to 60°C with passive cooling (MAXN TDP mode)[2] With full CPU+GPU stressing: NRU-170-PPC non-throttling at 60°C with 25W TDP mode (Orin NX MAXN)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035 EN 50121-3 (EN 50155:2017, Clause 13.4.8) (NRU-172S-PPC only)

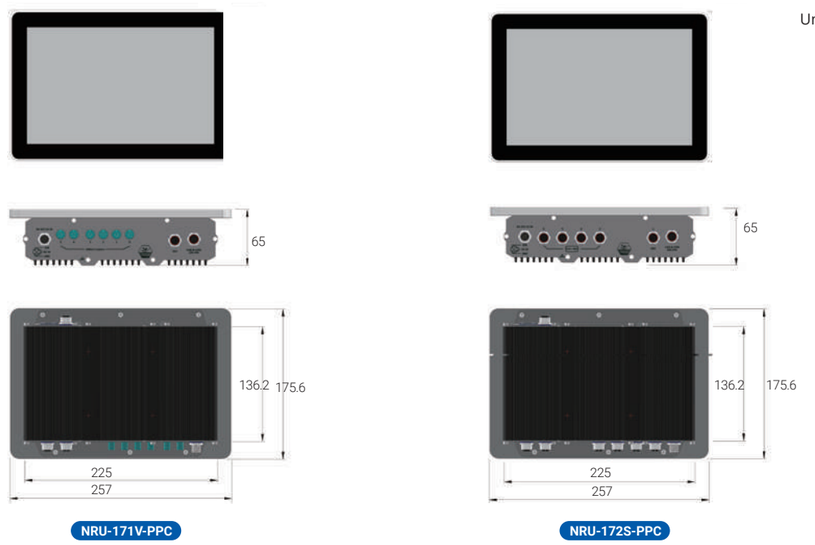
[1]The required DC input range is 8V to 35V when the system load is under 60W. The required DC input range is 12V to 35V when the system load is between 60W to 96W. The required DC input range is 20V to 35V when the system load is between 96W to 160W.
[2] For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.

Last updated: 22 - Oct 2024

Appearance



Dimensions



Ordering Information

Model No.	Product Description
NRU-171V-PPC	10.1" AI Panel PC Powered by Jetson Orin™ NX/ Nano with 6x GMSL2 Ports
NRU-172S-PPC	10.1" AI Panel PC Powered by Jetson Orin™ NX/ Nano with 4x PoE+ GbE Ports
Jetson Module Option	Options for Different Jetson Orin™ NX and Jetson Orin™ Nano SKUs
NVMe Option	Options for Different Capacities of M.2 2242 NVMe Storage

Optional Accessories

PA-60W-OW	60W AC/ DC power adapter 12V/ 5A; cord end terminals for terminal block, operating temperature: -30 to 60°C
PA-160W-OW	160W AC/ DC power adapter 20V/ 8A; 18AWG/ 120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C
AC-ISX031-H60	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H120	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H190	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H195.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H60	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H120	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H190	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 186°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H30	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 30.0°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H60	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 62.5°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H120	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 120°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap

NRU-160-AWP Series

IP66 Waterproof Jetson Orin™ NX/ Nano AI Computer with 6x GMSL2 or 4x PoE+ GbE Ports

CE FC

Key Features

- **Powered by NVIDIA® Orin™ NX or Orin™ Nano SoM bundled with JetPack**
- **IP66 waterproof and dustproof**
- **-25°C to 70°C fanless operation** (No throttling at 70°C with 20W TDP Mode)
- **6x GMSL2 automotive cameras via FAKRA Z connectors** (NRU-161V-AWP)
- **4x PoE+ GbE via M12 X-coded connectors** (NRU-162S-AWP)
- **1x CAN FD and 1x RS232 via M12 A-coded connectors**
- **225 x 136 x 55 mm low-profile design**
- **8V to 35V wide-range DC input with built-in ignition power control**

Introduction

The NRU-160-AWP series is a rugged, IP66 waterproof edge AI computer driven by an NVIDIA® Jetson Orin™ NX or Orin™ Nano. Its target applications include smart city roadside installations, AI inspection in food factories, perception units for outdoor robots, and ADAS for off-highway vehicles. Furthermore, it aims to redefine rugged, wide-temperature edge AI with its waterproof features at an affordable cost, achieved through a streamlined mechanical design, carefully selected waterproof connectors and standardized cable kit.

Powered by NVIDIA® Jetson Orin™ NX, the NRU-160-AWP delivers superior AI inference with up to 100 sparse TOPS (INT8) and can transcode up to eighteen 1080P video streams simultaneously. Designed to accommodate various camera requirements for vision-based AI applications, the NRU-160-AWP comes in two models: the NRU-161V-AWP, which supports up to 6x GMSL2 automotive cameras with pre-built drivers for selected cameras with IMX390, ISX031, and IMX490 CMOS sensors; and the NRU-162S-AWP, which offers 4x PoE+ GbE ports for IP or industrial GigE cameras. Additionally, a waterproof GbE port is provided for data transmission with other computers or LiDAR.

The NRU-160-AWP is designed for edge deployment, whether in-cabinet, in-vehicle, or in-robot. Its compact 225 x 136 x 55 mm profile makes it ideal for confined spaces. It is equipped with an 8V to 35V wide DC input range, ignition power control, 1x CAN FD bus port, and 1x RS232 port. It also features one mini-PCIe socket for CAN/ COM/ WiFi modules and one M.2 B-key socket for 4G LTE/ 5G NR mobile communication modules.

The integration of IP66 waterproof capability, Orin NX AI performance, and rich onboard camera connectivity strikes a balance between ruggedness, performance, and cost. It is a ready-to-deploy waterproof edge AI platform for smart agriculture, mining, construction, roadside applications, edge inspection, and outdoor AMRs.

Specifications

System Core		
Processor	NVIDIA® Jetson Orin™ NX system-on-module (SOM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU	NVIDIA® Jetson Orin™ Nano system-on-module (SOM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU
Memory	16GB/ 8GB LPDDR5 @ 3200 MHz on SOM	8GB/ 4GB LPDDR5 @ 2133 MHz on SOM
eMMC	N/A	

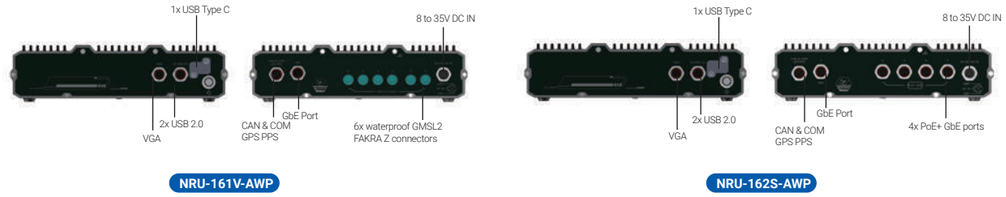
Panel I/O Interface	
GMSL2	**NRU-161V-AWP** 6x waterproof GMSL2 FAKRA Z connectors, supporting multiple configurations: Configuration A. 6x AC-IMX390 (2MP@30FPS) Configuration B. 6x AC-ISX031 (3MP@30FPS) Configuration C. 4x AC-IMX490 (5MP@30FPS)
Ethernet Port	**NRU-161V-AWP** 1x Gigabit Ethernet port via M12 X-coded 8-pin connector **NRU-162S-AWP** Port 0: 1x Gigabit Ethernet port via M12 X-coded 8-pin connector Port 1 to Port 4: 4x GbE ports by Intel® I350-AM4 via M12 X-coded 8-pin connector
PoE+	**NRU-162S-AWP** IEEE 802.3at PoE+ PSE for Port 1 to Port 4 with 50W total power budget
USB	2x USB 2.0 ports via M12 A-coded 8-pin connector 1x USB Type C port (for system flashing and OTG, under service door)
Video Port	1x VGA, supporting 1920x1080 at 60Hz via M12 A-coded 17-pin connector
Serial Port	1x RS-232 port via M12 A-coded 8-pin connector
CAN bus	1x CAN FD port via M12 A-coded 8-pin connector
Isolated DIO	1x isolated GPS PPS input via M12 A-coded 8-pin connector

Internal I/O Interface	
Mini PCI Express	1x full-size mini PCI Express socket (PCIe + USB 2.0)
M.2	1x M.2 3042/3052 B key (USB 3.2 Gen 1 + USB 2.0) for LTE/5G module with dual micro SIM support
Storage	
M.2 NVMe	1x M.2 2242 M key socket (PCIe Gen 3x1) for NVMe SSD
Power Supply	
DC Input	8V to 35V DC input and ignition power control via M12 A-coded, 5-pin connector (IGN/ GND/ V+)[1]
Mechanical	
Dimension	225 mm (W) x 136 mm (D) x 55 mm (H) (excluding wall-mount)
Weight	3.0 kg (excluding wall-mount)
Mounting	VESA 75 mount (standard) Wall-mount (standard)
Environmental	
Operating Temperature	-25°C to 70°C with passive cooling (20W TDP mode) [2] With full CPU+GPU stressing: 1. NRU-160-AWP non-throttling at 70°C with 20W TDP mode 2. NRU-160-AWP non-throttling at 60°C with 25W TDP mode (Orin NX MAXN)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035 EN 50121-3 (EN 50155:2017, Clause 13.4.8) (NRU-162S-AWP only)

[1]The required DC input range is 8V to 35V when the system load is under 60W. The required DC input range is 12V to 35V when the system load is between 60W to 96W. The required DC input range is 20V to 35V when the system load is between 96W to 160W.
[2]For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.

Last updated: 22 - Oct 2024

Appearance



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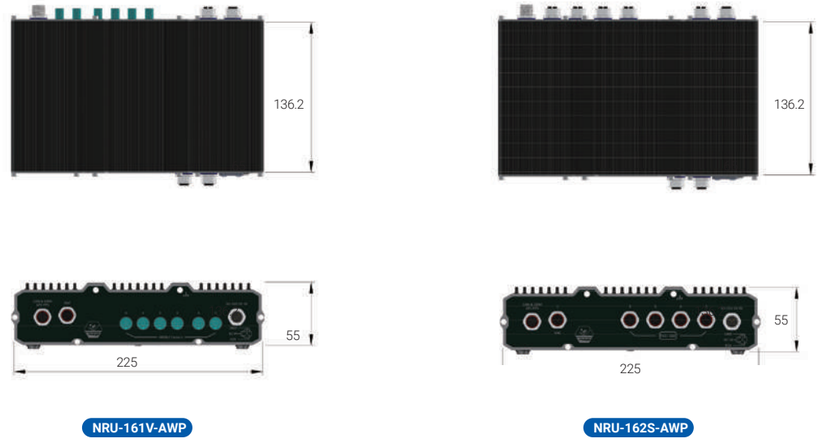
Unit : mm



Ordering Information

Model No.	Product Description
NRU-161V-AWP	IP66 Waterproof Jetson Orin™ NX/ Nano Edge AI Computer with 6x GMSL2 Ports
NRU-162S-AWP	IP66 Waterproof Jetson Orin™ NX/ Nano Edge AI Computer with 4x PoE+ GbE Ports
Jetson Module Option	Options for Different Jetson Orin™ NX and Jetson Orin™ Nano SKUs
NVMe Option	Options for Different Capacities of M.2 2242 NVMe Storage

Optional Accessories

PA-60W-OW	60W AC/ DC power adapter 12V/ 5A; cord end terminals for terminal block, operating temperature: -30 to 60°C
PA-160W-OW	160W AC/ DC power adapter 20V/ 8A; 18AWG/ 120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C
AC-ISX031-H60	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H120	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H190	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H195.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H60	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H120	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H190	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 186°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H30	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 30.0°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H60	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 62.5°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H120	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 120°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap

NRU-120S Series

NVIDIA® Jetson AGX Xavier™ AI NVR for Intelligent Video Analytics

Key Features

- **Powered by NVIDIA® Jetson AGX Xavier™ SOM bundled with JetPack 4.4**
- **4x IEEE 802.3at Gigabit PoE+ ports with screw-lock**
- **2x front-accessible 2.5” HDD/SSD trays**
- **1x M.2 2280 M key socket for NVMe SSD**
- **1x mini PCIe socket for WIFI/4G module**
- **1x isolated CAN bus port and 1x RS232 port with flow control**
- **1x GPS PPS input, 3-CH isolated DI and 4-CH isolated DO**
- **8 to 35V wide-range DC input with built-in ignition power control**

Introduction

NRU-120S series is a new rugged edge AI-based video analytics solution capable of video recording, transcoding, real-time inference, etc. Powered by NVIDIA® Jetson AGX Xavier™ system-on-module (SOM), it comprises of an 8-core ARM CPU and NVIDIA Volta GPU with 512 CUDA cores and 64 Tensor cores that offer 11 TFLOPS FP16 or 22 TOPS INT8 computing power.

Benefiting from the low-power design of NVIDIA® Jetson AGX Xavier™, NRU-120S offers significant inference performance while consuming only 30W of power. The efficient power design and the compact form factor make it the perfect edge AI solution for both stationary and mobile applications.

NRU-120S offers four 802.3at Gigabit PoE+ ports; each port can supply up to 25.5W of power to PD devices such as IP cameras and industrial cameras. In addition to 32GB eMMC on the Xavier module, NRU-120S further incorporates two front-accessible 2.5" HDD/ SSD trays for expanding storage capacity and an M.2 2280 NVMe socket for fast SSD read/write performance. It also has one mini-PCIe socket for WIFI and 4G module, as well as 1 GPS PPS input, 3-CH isolated DI and 4-CH isolated DO for communication with external devices.

By integrating PoE+ connectivity, a wide range of NVIDIA AI tools, and modern deep learning frameworks, NRU-120S pushes real-time image and video inference to the edge. It is a one-stop AI-based video analytics solution that offers 802.3at PoE+ camera connections, video decoding, video streaming, video recording, and edge AI inference. With Neousys' unique damping bracket design, ignition power control, and wide voltage power supply, NRU-120S is an ideal video inference platform for autonomous machines, predictive maintenance, law enforcement, and smart city applications.

Specifications

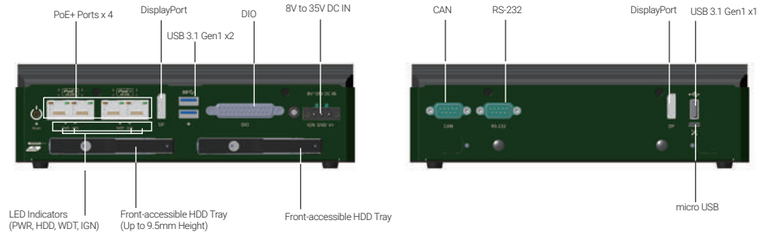
System Core	
Processor	Supporting NVIDIA® Jetson AGX Xavier™ system-on-module, comprising of NVIDIA® Volta GPU and Carmel CPU
Memory	32GB LPDDR4x @ 2133 MHz on SOM
eMMC	32GB eMMC 5.1 on SOM
I/O Interface	
PoE+	4x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I350
CAN	1x isolated CAN 2.0 port
Isolated DIO	1x GPS PPS input. 3-CH isolated DI and 4-CH isolated DO
USB	3x USB 3.1 Gen1 (5 Gbps) ports
Video Port	2x DisplayPort, supporting 3840x2160 at 60Hz
Serial Port	1x RS-232 port with flow control
Storage Interface	
SATA HDD	2x front-accessible HDD trays for 2.5” HDD/SSD installation (up to 9.5mm height)
M.2 NVMe	1x M.2 2280 M key socket (PCIe Gen3 x2) for NVMe SSD
Internal Expansion Bus	
Mini PCI Express	1x full-size mini PCI Express socket with internal SIM socket

Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8 to 35V DC input (IGN/ GND/ V+)
Mechanical	
Dimension	230 mm (W) x 173 mm (D) x 66 mm (H)
Weight	2.7 kg (excluding damping bracket)
Mounting	Wall-mount with damping brackets (Standard)
Environmental	
Operating Temperature	-25°C to 50°C with passive cooling (MAX TDP mode) * -25°C to 70°C with passive cooling (30W TDP mode) * -25°C to 70°C with optional fan kit (all modes) *
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.7, Category 4
Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035

** For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

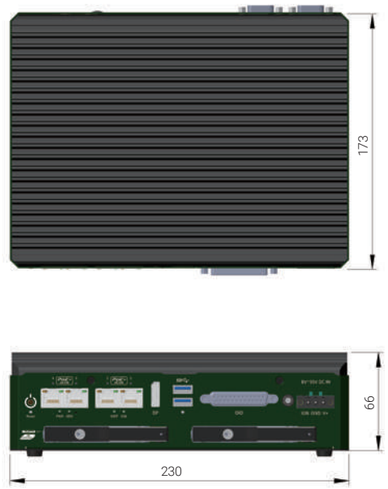
Last updated: 8 - Apr 2021

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
NRU-120S	NVIDIA® Jetson AGX Xavier™ AI NVR for Intelligent Video Analytics
NRU-120S-F	NVIDIA® Jetson AGX Xavier™ AI NVR for Intelligent Video Analytics with Fan Kit

Optional Accessories

PA-160W-OW	160W AC-DC power adapter, 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.
PA-120W-OW	120W AC/DC power adapter, 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.
Fan kit	Fan kit with 92mm x 92mm fan for NRU-120S series

NRU-110V Series

NVIDIA® Jetson AGX Xavier™ Edge AI Platform Supporting 8x GMSL Automotive Cameras and 10GbE Ethernet

Key Features

- **Powered by NVIDIA® Jetson AGX Xavier™ SOM bundled with JetPack 4.4**
- **Support 8x GMSL automotive cameras via FAKRA Z connectors**
- **1x 10GBASE-T 10G Ethernet port**
- **1x M.2 2280 M key socket for NVMe SSD**
- **1x mini PCIe socket for WiFi/4G module**
- **1x isolated CAN bus port and 1x RS232 port with flow control**
- **1x GPS PPS input, 3-CH isolated DI and 4-CH isolated DO**
- **8V to 35V wide-range DC input with built-in ignition power control**

Introduction

The NRU-110V series is a Jetson AGX Xavier™ computer supporting GMSL cameras that can act as a camera sensor hub for autonomous driving, a control unit for autonomous mobile robots (AMR), or a video transcoding unit for teleoperation of unmanned ground vehicles. It is a turnkey solution with on-board GMSL deserializers for eight synchronized automotive GMSL camera inputs and a pre-installed board support package (BSP) with drivers for selected cameras.

The support of GMSL cameras equips NRU-110V with powerful vision capability. Taking advantage of automotive cameras featuring IP67 waterproof characteristic, high dynamic range (>120dB HDR), auto white balance (AWB), and LED flickering mitigation (LFM), NRU-110V can obtain high-quality images regardless of lighting conditions, from bright sunny days to overcast weather and pitch-black nights. More than that, it not only has a unique synchronization mechanism capable of simultaneously acquiring images from eight GMSL cameras within microseconds channel-to-channel skew, but also accepts GPS PPS signal to align image data with other sensors, such as LIDAR or cameras on other systems.

NRU-110V further integrates various I/O interfaces to interact with different sensors on autonomous machines. It has a 10Gb Ethernet to stream raw images in real-time to another powerful GPU computer performing perception, a CAN bus interface for in-vehicle communication, or connect an inertial measurement unit (IMU) to localize and determine orientation and position. Additionally, NRU-110V offers RS-232 plus dedicated GPS PPS input for connecting an external GPS module, M.2 NVMe slot for storage extension, mini-PCIe for WiFi/ 4G module connectivity, and isolated DIO for generic controls.

Combining eight GMSL automotive camera support, significant TFLOPS inference performance, multiple sensor interfaces, and 10GbE data transmission, the NRU-110V is a rugged edge AI computer connected to a variety of sensors to fulfill perception and planning on the same platform. It is ideal for AI-based vision applications that require continuous interactions with surroundings, such as UGV, AMR, ADAS, intelligent V2X, etc.

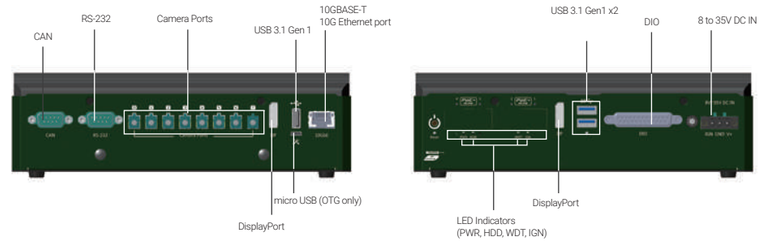
Specifications

System Core	
Processor	Supporting NVIDIA® Jetson AGX Xavier™ system-on-module, comprising of NVIDIA® Volta GPU and Carmel CPU
Memory	32GB LPDDR4x @ 2133 MHz on SOM
eMMC	32GB eMMC 5.1 on SOM
I/O Interface	
GMSL Camera	8x GMSL FAKRA Z connector, supporting 8x 1280x720 @ 30 FPS camera input
Ethernet port	1x 10GBASE-T 10G Ethernet port by Intel® X550-AT controller
CAN bus	1x isolated CAN bus 2.0 port
Isolated DIO	1x GPS PPS input. 3-CH isolated DI and 4-CH isolated DO
USB	3x USB 3.1 Gen1 (5 Gbps) ports
Video Port	2x DisplayPort, supporting 3840x2160 at 60Hz
Serial Port	1x RS-232 port with flow control
Storage Interface	
M.2 NVMe	1x M.2 2280 M key socket (PCIe Gen3 x2) for NVMe SSD
Internal Expansion Bus	
Mini PCI Express	1x full-size mini PCI Express socket with internal SIM socket

Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input (IGN/ GND/ V+)
Mechanical	
Dimension	230 mm (W) x 173 mm (D) x 66 mm (H)
Weight	2.7 kg (excluding damping bracket)
Mounting	Neousys' patented damping bracket (standard)
Environmental	
Operating Temperature	-25°C to 50°C with passive cooling (MAX TDP mode) * -25°C to 70°C with passive cooling (30W TDP mode) * -25°C to 70°C with optional fan kit (all modes) *
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.7, Category 4
Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035

*Note: * For sub-zero and over 60°C operating temperature, a wide temperature Solid State Disk (SSD) is required. NRU-110V is shipped with 30W TDP mode*

Appearance



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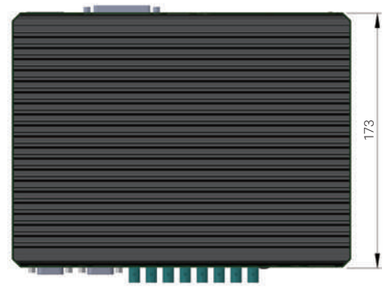
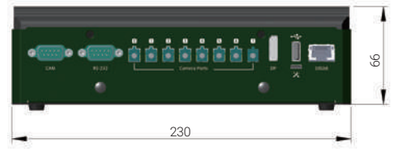
Unit : mm





Ordering Information

Model No.	Product Description
NRU-110V	NVIDIA® Jetson AGX Xavier™ edge AI platform supporting 8x GMSL automotive cameras and 10G Ethernet
NRU-110V-F	NVIDIA® Jetson AGX Xavier™ edge AI platform supporting 8x GMSL automotive cameras and 10G Ethernet with fan kit

Optional Accessories

PA-120W-OW	120W AC/DC power adapter, 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.
Fan kit	Fan kit with 92mm x 92mm fan for NRU-110V series
AC-AR0147-H40	On Semi AR0147 CMOS sensor camera; 1280x720 @30fps; LFM; HFOV 41, IP67; male FAKRA connector
AC-AR0147-H60	On Semi AR0147 CMOS sensor camera; 1280x720 @30fps; LFM; HFOV 59, IP67; male FAKRA connector
AC-AR0147-H120	On Semi AR0147 CMOS sensor camera; 1280x720 @30fps; LFM; HFOV 125, IP67; male FAKRA connector
AC-AR0147-H190	On Semi AR0147 CMOS sensor camera; 1280x720 @30fps; LFM; HFOV 197, IP67; male FAKRA connector
FK-FF-CABLE-7M	7M FAKRA cable for cameras with male FAKRA connector; The waterproof end is black
FK-FF-CABLE-15M	15M FAKRA cable for cameras with male FAKRA connector; The waterproof end with heat shrink tube

*Note: * Combined use of different FOV with the same CMOS sensor is verified on NRU series. Combined use of different FOV with varying CMOS sensors is not guaranteed. Please consult Neousys for feasibility.*

NRU-52S+/ NRU-52S

Rugged NVIDIA® Jetson Orin™ NX/ Xavier™ NX Edge AI Computer with 4x PoE++ Ports for Intelligent Video Analytics

Key Features

- **Powered by NVIDIA® Jetson Orin™ NX or Xavier™ NX SOM bundled with JetPack 5.1.1**
- **Rugged -25°C to 70°C fanless operation**
- **4x IEEE 802.3bt PoE++ GbE ports with screw-lock**
- **2x mini-PCIe sockets for WIFI/GNSS/NVMe/CAN modules**
- **1x M.2 3042/3052 B key socket for 4G/5G mobile communication**
- **1x hardware configurable RS232/RS422/RS485 port**
- **8V to 35V wide-range DC input with built-in ignition power control**
- **MIL-STD-810H and EN 50155 certified**

CE FC

Introduction

NRU-52S series is a rugged, wide temperature, fanless edge AI computer delivering up to 100 TOPS for AI-based video analytics applications requiring H.264/H.265 video decoding and real-time inference. Power by an NVIDIA® Jetson Orin™ NX/ Xavier™ NX system on module (SoM), it comprises of NVIDIA® Ampere GPUs (Orin NX), CUDA cores, Tensor cores, and NVDLA (NVIDIA® Deep Learning Accelerator).

Benefiting from the power-efficiency of NVIDIA® Jetson Orin™ NX, which consumes only 25W of power, NRU-52S+ can decode up to 18 streams of 1080p video at 30 FPS, and also offer 100 TOPS inference performance. The high AI performance per watt makes NRU-52S+ ideal for applications with a limited power source, such as in a robot, vehicle, or rolling stock. Also, with Neousys' industrial-grade thermal design, NRU-52S+ is ideal for edge deployments that require fanless wide temperature operations, such as at roadside, wayside, construction site, agriculture, or in a dusty factory.

NRU-52S+ offers four IEEE 802.3bt PoE++ ports, each port can supply up to 90W to IP cameras or PTZ speed dome cameras for AI-based detection, tracking, and recognition applications. NRU-52S+ also offers flexible expansions with two mPCIe sockets for NVMe storage, WIFI, GNSS, or V2X module; one M.2 B key for 4G LTE or 5G NR module with dedicated passive thermal design, and a total of five antenna holes for mobile broadband. It also has one hardware configurable RS232/RS422/RS485, 1x GPS PPS input, 3-CH isolated DI, and 4-CH isolated DO for communication with external devices.

By integrating PoE++ connectivity, 100 TOPS inference performance, a vast of NVIDIA AI JetPack toolkits, NRU-52S+ can enable more possibilities for real-time video analytics such as autonomous machines, security alerts, law enforcement, and V2X applications. With its -25°C to 70°C fanless operation, wide-range DC input, ignition control, and 4G/ 5G connectivity, NRU-52S+ is not only for indoor/ stationary installations but also ideal for harsh edge deployments.

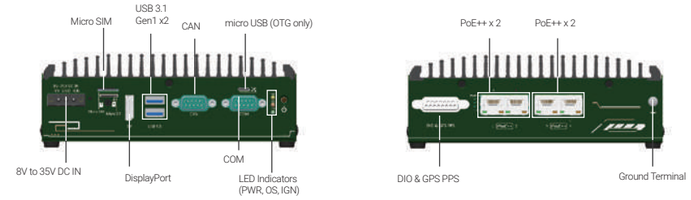
Specifications

	NRU-52S+-JON8/ NRU-52S+-JON16	NRU-52S-NX8/ NRU-52S-NX16
System Core		
Processor	NVIDIA® Jetson Orin™ NX system-on-module (SOM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU	NVIDIA® Jetson Xavier™ NX system-on-module (SOM), comprising NVIDIA® Volta GPU and Carmel CPU
Memory	8GB/ 16GB LPDDR5 @ 3200 MHz on SOM	8GB/ 16GB LPDDR4x (Xavier NX 8GB/ 16GB) @ 1600/ 1866 MHz on SOM
eMMC	N/A	16GB eMMC 5.1 on SOM
Bundled JetPack Version	JetPack 5.1.1	JetPack 4.6.1
Panel I/O Interface		
Ethernet Port	4x Gigabit ports with screw-lock, share 1 Gbps total bandwidth	
PoE Capability	In compliant with IEEE 802.3bt PoE++ Type 3 and Type 4 PSE, maximum 90W output on single PoE++ port Compatible with 802.3at (PoE+) and 802.3af (PoE) PD	
USB	2x USB 3.1 Gen1 ports (total 5 Gbps shared with M.2 B key) 1x micro USB (OTG)	
Video Port	1x DisplayPort, supporting 3840x2160 at 60Hz	
Serial Port	1x hardware configurable RS-232/ 422/ 485 port	
CAN Bus	1x isolated CAN 2.0 port	
Isolated DIO	1x GPS PPS input, 3-CH isolated DI and 4-CH isolated DO	
Ground Terminal	1x M4 ground terminal for chassis ESD shielding	

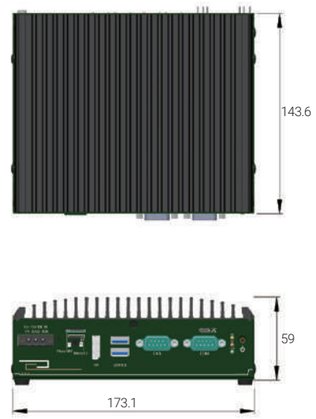
	NRU-52S+-JON8/ NRU-52S+-JON16	NRU-52S-NX8/ NRU-52S-NX16
Internal I/O Interface		
Mini PCI Express	**With Orin NX** 1x full-size mini PCI Express socket (PCIe + USB 2.0) for M.2 M 2242 NVMe with adapter for storage 1x full-size mini PCI Express socket (PCIe + USB 2.0) for GNSS, V2X, or CAN	**With Xavier NX** 1x full-size mini PCI Express socket (PCIe + USB 2.0) for WiFi, NVMe storage 1x full-size mini PCI Express socket (USB 2.0) for GNSS, V2X, or CAN
M.2	1x M.2 3042/ 3052 B key (USB 3.1 Gen 1 + USB 2.0) for 4G/5G module with dual SIM support (1x front-accessible, 1x internal)	
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input and ignition power control (V+/ GND/ IGN)	
Mechanical		
Dimension	173 mm (W) x 144 mm (D) x 60 mm (H)	
Weight	1.4kg	
Mounting	Wall-mount bracket (optional)	
Environmental		
Operating Temperature	-25°C to 70°C with passive cooling (15W TDP mode with 50W PoE++ power supply) -25°C to 70°C with optional fan kit (15W TDP mode with 144W PoE++ power supply)	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90%, non-condensing	
Vibration	Operating, MIL-STD-810H, Method 516.8, Procedure I	
Shock	Operating, MIL-STD-810H, Method 514.8, Category 4	
EMC	CE/FCC Class A, according to EN 55032 & EN 55035 EN 50121-3 (EN 50155:2017, Clause 13.4.8)	

• For sub-zero and over 60°C operating temperature, a wide temperature SD card / NVMe is required.

Appearance



Dimensions



Unit : mm

Ordering Information

Model No.	Product Description
NRU-52S+-JON8	Rugged NVIDIA® Jetson Orin™ NX(8GB) Edge AI Computer with 4x PoE++ Ports for Intelligent Video Analytics with 128GB M.2 2242 M NVMe
NRU-52S+-JON16	Rugged NVIDIA® Jetson Orin™ NX(16GB) Edge AI Computer with 4x PoE++ Ports for Intelligent Video Analytics with 128GB M.2 2242 M NVMe
NRU-52S+-JONANO8	Rugged NVIDIA® Jetson Orin™ Nano(8GB) Edge AI Computer with 4x PoE++ Ports for Intelligent Video Analytics with 128GB M.2 2242 M NVMe
NRU-52S+-JONANO4	Rugged NVIDIA® Jetson Orin™ Nano(4GB) Edge AI Computer with 4x PoE++ Ports for Intelligent Video Analytics with 128GB M.2 2242 M NVMe
NRU-52S-NX8	Rugged NVIDIA® Jetson Xavier™ NX(8GB) Edge AI Computer with 4x PoE++ Ports for Intelligent Video Analytics
NRU-52S-NX16	Rugged NVIDIA® Jetson Xavier™ NX(16GB) Edge AI Computer with 4x PoE++ Ports for Intelligent Video Analytics

Optional Accessories

PA-160W-OW	160W AC-DC power adapter, 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.
PA-120W-OW	120W AC/DC power adapter, 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.
Wmkit-NRU-50	Wall mounting kit for NRU-50 series, including wall mounting brackets and screws
AccsyBx-FAN-NRU-50	Fan kit for NRU-50 series, including 92x92mm fan, fan frame, fan cable cover, and screws
Tpkit-NRU-50	3 pcs of 30x30x2 mm thermal pad for mPCIe modules with the max component height between 1.3 mm and 2.4 mm, and M.2 B key modules with the max component height between 0.7 mm and 2.0 mm

NRU-51V+/ NRU-51V

Rugged NVIDIA® Jetson Orin™ NX/ Xavier™ NX GMSL2 Camera Sensor Hub for Autonomous Vehicles and Teleoperation

Key Features

- **Powered by NVIDIA® Jetson Orin™ NX or Xavier™ NX SOM bundled with JetPack 5.1.1**
- **Rugged -25°C to 60°C fanless operation**
- **Support 4x GMSL2 automotive cameras via FAKRA Z connectors**
- **1x 10GBASE-T 10Gb and 1x 1GBASE-T 1Gb Ethernet port**
- **2x mini-PCIe sockets for WiFi/ GNSS/ NVMe/ CAN modules**
- **1x M.2 3042/ 3052 B key socket for 4G/ 5G mobile communication**
- **1x isolated CAN 2.0, 1x configurable RS232/ 422/ 485 port, and 1x GPS PPS input**
- **8V to 35V wide-range DC input with built-in ignition power control**

Introduction

NRU-51V series is a rugged Jetson Orin™ NX/ Xavier™ NX computer supporting GMSL2 cameras that can act either as a sensor hub or a perception unit for ADAS, teleoperation, autonomous mobile robots, and autonomous vehicles.

By supporting GMSL2 automotive cameras, they enable NRU-51V+ with greater vision capability by taking advantage of advanced features such as IP67 waterproof, high dynamic range (120dB HDR), auto white balance (AWB), and LED flicker mitigation (LFM). NRU-51V+ can obtain high-quality images with minimal latency regardless of lighting conditions, from bright sunny days to pitch-black nights. Moreover, it has a unique synchronization mechanism capable of acquiring images from four GMSL2 cameras simultaneously within microseconds channel-to-channel skew. It can further accept GPS PPS signal to align image data with LIDAR or synchronize cameras on other systems.

Thanks to the great power efficiency of NVIDIA® Jetson Orin NX™ NX SOM, NRU-51V+ delivers 100 TOPS inference performance in its 25W power package. Users can transfer raw camera images through its built-in 10GBASE-T Ethernet to another GPU server for perception processing, but also leverage its significant TOPS for real-time object or ROI detection. For teleoperation applications, users can utilize its hardware H.264/265 video codec, to encode video streams from four GMSL2 cameras in real-time and transmit the live video feed to a driver at a remote location via 5G telecommunication with minimum latency.

The combination of GMSL2 interface and Jetson Orin™ NX makes NRU-51V+ much more than just a simple edge AI computer. With greater vision brought by automotive cameras plus I/O interfaces such as 10GbE, CAN 2.0, and M.2 for 5G broadband, NRU-51V+ plays a central role in a moving platform, as a sensor hub for ADAS, a perception unit for AGV/ AMR, or a teleoperation controller for off-highway vehicles.

Specifications

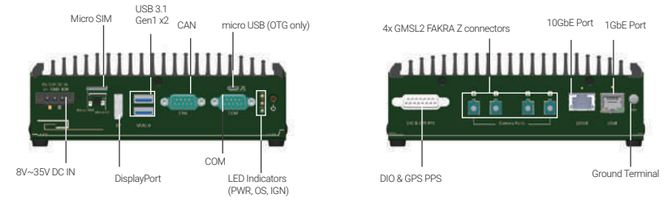
	NRU-51V+-JON8/ NRU-51V+-JON16	NRU-51V-NX8/ NRU-51V-NX16
System Core		
Processor	NVIDIA® Jetson Orin™ NX system-on-module (SOM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU	NVIDIA® Jetson Xavier™ NX system-on-module (SOM), comprising NVIDIA® Volta GPU and Carmel CPU
Memory	8GB/ 16GB LPDDR5 @ 3200 MHz on SOM	8GB/ 16GB LPDDR4x (Xavier NX 8GB/ 16GB) @ 1600/ 1866 MHz on SOM
eMMC	N/A	16GB eMMC 5.1 on SOM
Bundled JetPack Version	JetPack 5.1.1	JetPack 4.6.1
Panel I/O Interface		
GMSL2 Camera	4x GMSL2 FAKRA Z connectors, supporting 4x 1920x1080 @ 30 FPS camera input	
Ethernet Port	1x 10GBASE-T 10GbE port with screw-lock 1x 1GBASE-T 1GbE port with screw-lock	
USB	2x USB 3.1 Gen1 ports (total 5 Gbps shared with M.2 B key) 1x micro USB (OTG only)	
Video Port	1x DisplayPort, supporting 3840x2160 at 60Hz	
Serial Port	1x hardware configurable RS-232/ 422/ 485 port	
CAN Bus	1x isolated CAN 2.0 port	
Isolated DIO	1x GPS PPS input, 3-CH isolated DI and 4-CH isolated DO	
Ground Terminal	1x M4 ground terminal for chassis ESD shielding	
Internal I/O Interface		
Mini PCI Express	**With Orin NX** 1x full-size mini PCI Express socket (PCIe + USB 2.0) for M.2 M 2242 NVMe with adapter for storage 1x full-size mini PCI Express socket (PCIe + USB 2.0) for GNSS, V2X, or CAN	**With Xavier NX** 1x full-size mini PCI Express socket (PCIe + USB 2.0) for WiFi, NVMe storage 1x full-size mini PCI Express socket (USB 2.0) for GNSS, V2X, or CAN
M.2	1x 3042/3052 M.2 B key (USB 3.1 Gen 1 + USB 2.0) for 4G/5G module with dual SIM support (1x front-accessible, 1x internal)	

	NRU-51V+-JON8/ NRU-51V+-JON16	NRU-51V-NX8/ NRU-51V-NX16
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8V to 35V DC input and ignition power control (V+/ GND/ IGN)	
Mechanical		
Dimension	173 mm (W) x 144 mm (D) x 60 mm (H)	
Weight	1.4kg	
Mounting	Wall-mount bracket (optional)	
Environmental		
Operating Temperature	With full CPU+GPU stressing: 1. NRU-51V+ non-throttling at 65C with 15W TDP mode (fanless) 2. NRU-51V+ non-throttling at 60C with Orin NX 16GB MAXN TDP mode (fanless) -25°C to 60°C fanless operation (15W TDP mode)* -25°C to 70°C fanless operation (15W TDP mode, without 10GbE transmission)* -25°C to 70°C with optional fan kit (15W TDP mode)*	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90%, non-condensing	
Vibration	Operating, MIL-STD-810H, Method 514.8, Category 4	
Shock	Operating, MIL-STD-810H, Method 516.8, Procedure I	
EMC	CE/FCC Class A, according to EN 55032 & EN 55035	

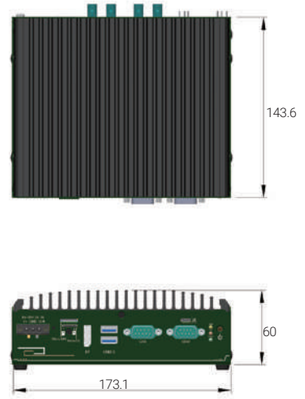
** For sub-zero and over 60°C operating temperature, a wide temperature SD card / NVMe is required.*

Last updated: 24 - Oct 2024

Appearance



Dimensions



Unit : mm

Ordering Information

Model No.	Product Description
NRU-51V+-JON8	Rugged NVIDIA® Jetson Orin™ NX(8GB) GMSL2 Camera Sensor Hub with 128GB M.2 2242 M NVMe
NRU-51V+-JON16	Rugged NVIDIA® Jetson Orin™ NX(16GB) GMSL2 Camera Sensor Hub with 128GB M.2 2242 M NVMe
NRU-51V+-JONANO8	Rugged NVIDIA® Jetson Orin™ Nano(8GB) GMSL2 Camera Sensor Hub with 128GB M.2 2242 M NVMe
NRU-51V+-JONANO4	Rugged NVIDIA® Jetson Orin™ Nano(4GB) GMSL2 Camera Sensor Hub with 128GB M.2 2242 M NVMe
NRU-51V-NX8	Rugged NVIDIA® Jetson Xavier™ NX(8GB) GMSL2 Camera Sensor Hub
NRU-51V-NX16	Rugged NVIDIA® Jetson Xavier™ NX(16GB) GMSL2 Camera Sensor Hub

Optional Accessories

※The NRU-51V+ is compatible with the Tier IV C1 series. For camera purchases, please contact Tier IV.

AC-ISX031-H60	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H120	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-ISX031-H190	Sony ISX031 CMOS sensor w/ built-in ISP; 1920x1536 @30fps, HFOV H195.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H60	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H120	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H190	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 186°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H30	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 30.0°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H60	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 62.5°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX490-H120	Sony IMX490 CMOS sensor camera; 2880x1860 @30fps; LFM; HFOV 120°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-AR0233-H60	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 60°; IP67; -40°C to 85°C operating temperature; male FAKRA connector
AC-AR0233-H120	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 118°; IP67; -40°C to 85°C operating temperature; male FAKRA connector
AC-AR0233-H190	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 196°; IP67; -40°C to 85°C operating temperature; male FAKRA connector; without lens cap
AC-AR0233-H60-60FPS	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 60fps; LFM; HFOV 60°; IP67; -40°C to 70°C operating temperature; male FAKRA connector
AC-AR0233-H120-60FPS	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 60fps; LFM; HFOV 118°; IP67; -40°C to 70°C operating temperature; male FAKRA connector
AC-AR0233-H190-60FPS	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 60fps; LFM; HFOV 196°; IP67; -40°C to 70°C operating temperature; male FAKRA connector; without lens cap
PA-60W-OW	60W AC/ DC power adapter 12V/ 5A; cord end terminals for terminal block, operating temperature: -30 to 60°C
PA-120W-OW	120W AC/ DC power adapter 20V/ 6A; 18AWG/ 120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C
Wmkit-NRU-50	Wall mount kit for NRU-50 series, including wall mount brackets and screws
AccsyBx-FAN-NRU-50	Fan kit for NRU-50 series, including 92x92mm fan, fan frame, fan cable cover, and screws
Tpkit-NRU-50	3 pcs of 30x30x2 mm thermal pad for mPCIe modules with the max component height between 1.3 mm and 2.4 mm, and M.2 B key modules with the max component height between 0.7 mm and 2.0 mm
FK-FF-CABLE-7M	7M FAKRA cable for cameras with male FAKRA connector; the waterproof end is black
FK-FF-CABLE-15M	15M FAKRA cable for cameras with male FAKRA connector; the waterproof end has heat shrink tube

NRU-154PoE-FT
NRU-156U3-FT

NVIDIA® Jetson Orin™ NX Edge AI Computer with 4x 2.5GbE PoE+/ 6x USB 3.2 ports and Flattop Heatsink

Key Features

- **Powered by NVIDIA® Jetson Orin™ NX bundled with JetPack 5.1.1**
- **Flattop heatsink design for conduction-cooled, in-cabinet deployment**
- **Up to 100 TOPS AI inference performance**
- **Full-bandwidth ports for camera connectivity:**
  - 4x 2.5GbE PoE+ ports (NRU-154PoE-FT)
  - 6x USB 3.2 ports (NRU-156U3-FT)
- **1x RS-232 and 1x isolated RS-485**
- **1x M.2 2242 M key NVMe for BSP and data storage**
- **-25°C to 60°C fanless operating temperature (with heat spreader attachment. No throttling at 60°C with Orin NX 20W TDP mode)**

Introduction

The NRU-150-FT series is a compact, fanless edge AI computer incorporating Jetson Orin NX and independent 2.5GbE PoE+ or USB 3 camera connectivity. Its special flattop heatsink is designed to be mounted inside a sealed enclosure to aid metal processing, food processing, smart agriculture, or roadside applications, where it can be protected from environments that contain dust, metal particles or fluid.

Benefiting from the power efficient NVIDIA® Jetson Orin™ NX, the NRU-150-FT series can deliver up to 100 TOPS inference performance in a 25W power package. Offering full bandwidth each port to complement versatile video inputs for edge inspection, NRU-154PoE-FT features 4x 2.5GbE PoE+ ports for IP cameras and industrial GigE cameras, and NRU-156U3-FT features 6x USB 3.2 ports for industrial USB3 cameras.

The flattop heatsink design further expands application senarios by allowing users to mount the NRU-150-FT series inside a sealed enclosure and conduct the heat to the outer surface, offering a -25 to 60°C wide-temperature fanless operation. It makes NRU-150-FT suitable for environments such as dusty roadsides, humidity farms, and harbors. Moreover, it is also applicable to versatile AI-based factory automation for metal, wood, food, and chemical processing.

By integrating full-bandwidth 2.5GbE PoE+/ USB3 ports for camera connectivity, 100 TOPS AI inference performance, unique flattop heatsink for enclosed installation, and a vast array of NVIDIA AI JetPack toolkits, the NRU-150-FT series presents more possibilities for edge inspection in harsh environments, where dustproof, waterproof, or flameproof protection is needed.

Specifications

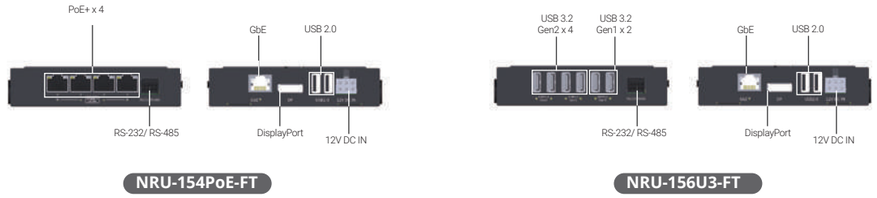
	NRU-154PoE-FT	NRU-156U3-FT
System Core		
Processor	NVIDIA® Jetson Orin™ NX system-on-module (SoM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU	
Memory	8GB/ 16GB LPDDR5 @ 3200 MHz on SoM	
Panel I/O Interface		
USB	2x USB 2.0 ports	2x USB 3.2 Gen2 (10 Gbps) ports with screw-lock 4x USB 3.2 Gen1 (5 Gbps) ports with screw-lock 2x USB 2.0 ports
Ethernet Port	Port 1: Gigabit Ethernet Port 2 to Port 5: 2.5 Gigabit Ethernet ports by Intel® I225 with screw-lock[1]	1x Gigabit Ethernet
PoE Capability	IEEE 802.3at PoE+ PSE for Port 2 to Port 5, 50W total power budget	-
Serial Port	1x RS-232 port and 1x isolated RS-485 port	
Video Port	1x DisplayPort, supporting 3840x2160 at 60Hz	
DC Input	12V DC power input	

	NRU-154PoE-FT	NRU-156U3-FT
Internal I/O Interface		
M.2 NVMe	1x M.2 2242 M key socket (PCIe Gen4 x2) for NVMe SSD	
USB	1x micro USB (OTG)	
Mechanical		
Dimension	116 mm (W) x 171 mm (D) x 27 mm (H) (without wall-mount bracket)	
Weight	1.0 kg	
Mounting	Wall-mount (standard)	
Environmental		
Operating Temperature	-20°C to 60°C (20W TDP mode) fanless operating temperature while mounted on 50 x 50 x 0.2 cm metallic plate [2] [3]	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90%, non-condensing	
Vibration	Operating, MIL-STD-810H, Method 514.8, Category 4	
Shock	Operating, MIL-STD-810H, Method 516.8, Procedure I	
EMC	CE/FCC Class A, according to EN 55032 & EN 55035	

[1] Due to I225-IT specification limitation, for systems running 2.5G Ethernet link speeds, please limit the operating temperature to 60°C.
[2] For sub-zero and over 60°C operating temperature, a wide temperature NVMe is required.
[3] Without heat conduction from the flattop heatsink, the fanless operating temperature is -20°C to 45°C (20W TDP mode)

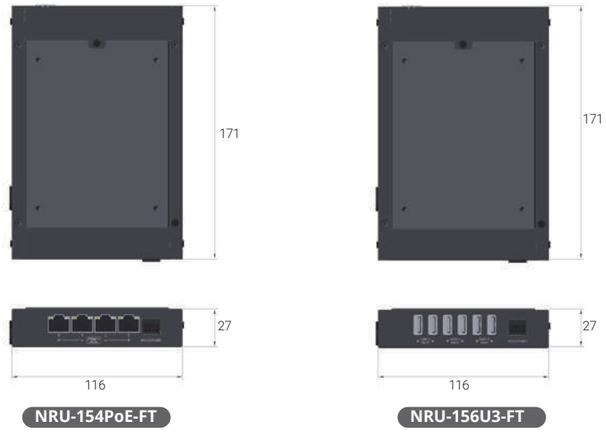
Last updated: 3 - Jul 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
NRU-154-JON8	NVIDIA® Jetson Orin™ NX Edge AI Computer with 4x PoE+ GbE, flattop heatsink, Jetson Orin NX (8GB), and 128GB NVMe with pre-installed system image
NRU-154-JON16	NVIDIA® Jetson Orin™ NX Edge AI Computer with 4x PoE+ GbE, flattop heatsink, Jetson Orin NX (16GB), and 128GB NVMe with pre-installed system image
NRU-156-JON8	NVIDIA® Jetson Orin™ NX Edge AI Computer with 6x USB 3.2, flattop heatsink, Jetson Orin NX (8GB), and 128GB NVMe with pre-installed system image
NRU-156-JON16	NVIDIA® Jetson Orin™ NX Edge AI Computer with 6x USB 3.2, flattop heatsink, Jetson Orin NX (16GB), and 128GB NVMe with pre-installed system image

Optional Accessories

PA-60W-OW	60W AC/ DC power adapter 12V/ 5A; cord end terminals for terminal block, operating temperature: -30°C to 60°C

FLYC-300 Series

Low-SWaP AI Mission Computer Powered by NVIDIA® Jetson Orin™ NX

Key Features

- **Low Size, Weight and Power (SWaP) at only 297g.**
- **Up to 100 TOPS GPU by NVIDIA® Jetson Orin™ NX**
- **Supports multiple camera and sensor interfaces**
  - **2x GbE and 2x USB3 for RGB/ Infrared/ hyperspectral cameras and lidar/ radar**
  - **2x GMSL2 for HDR/ 3D cameras**
- **Built-in UART and CAN to interact with flight controller**
- **1x M.2 2230 for storage and 4G/5G communication ready**
- **Supports 4S-14S drone battery pack**

CE FC

Introduction

Neousys FLYC-300 is an NVIDIA Jetson Orin NX based mission computer tailor-made for UAV and UGV applications. Designed to coincide and collaborate with the flight controller that is responsible for stabilizing and controlling drone's flight, FLYC-300 fuels compelling 100 TOPS AI performance combining versatile sensors to empower true autonomy of drone and advance applications such as autonomous navigation, obstacle avoidance, object detection and tracking.

Catering to the diverse needs of cameras and sensors like RGB, hyperspectral, infrared, LiDAR, and 3D cameras, FLYC-300 boasts a versatile array of connectivity options, including two Ethernet, two USB3.2, and two GMSL2 ports. Making it ideal for real-time video analytics applications such as drone imagery collection, environmental monitoring, infrastructure monitoring. To command the flight of drone, FLYC-300 can communicate seamlessly with the flight controller through configurable UART, Ethernet, and CAN ports. It also accommodates a wide voltage input range from 4S to 14S battery packs via the XT30 DC-IN connector. The system is compatible and supports installation of 5G/ 4G modules for real-time transmission of images, videos, and data.

FLYC-300 can elevate unmanned systems to another level by combining vision devices with a powerful NVIDIA Jetson-based AI platform. Intelligent autonomous UAV and UGV systems can deliver enhanced operational effectiveness, risk reduction, and real-time information, making them a valuable repertoire. With its 297 grams ultra-lightweight design, versatile connectivity, FLYC-300 is ready for integration and deployment into real-world applications.

Specifications

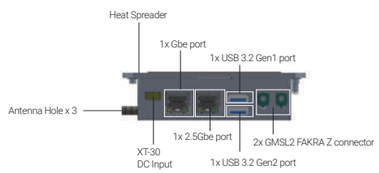
System Core	
Processor	NVIDIA® Jetson Orin™ NX system-on-module (SOM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU
Memory	8GB/ 16GB LPDDR5 @ 3200 MHz on SOM
External I/O Interface	
GMSL2	2x GMSL2 FAKRA Z connector, supporting 2x 1920x1080 @ 60 FPS or 2x 2880x1860 @ 30 FPS camera input
Ethernet	1x Gb Ethernet port by NVIDIA 1x 2.5Gb Ethernet port by Intel® I225-IT
USB	1x USB 3.2 Gen2 (10 Gbps) port 1x USB 3.2 Gen1 (5 Gbps) port
SD Card	1x Micro SD Card Slot
Native Video Port	1x DisplayPort connector
Internal I/O Interface	
USB Type-C	1x USB Type-C (for debug only)
USB	1x USB 2.0
CAN Bus	1x CAN bus 2.0
I2C	I2C
GPIO	Isolated 2x DI, 4x DO
UART	1x UART
Storage Interface	
M.2	1x M.2 2230 M key socket NVMe interface (Gen4 x4)

Expansion Bus			
M.2	1x M.2 3042/3052 B key with internal micro SIM socket		
Power Supply			
DC Input	XT-30 for 12V to 60V DC input Supports 4S-14S battery pack		
Mechanical			
Dimension	124mm x 123mm x 29.8mm (Excluded enclosure) 124mm x 123mm x 30.5mm (Included enclosure)		
Weight	297g (Excluding enclosure) 345g (Including enclosure)		
Mounting	Wall Mount		
Fan	Optional external-accessible 65mm x 65mm fan for system heat dissipation		
Environmental			
Operating Temperature	Temperature*	Heat Spreader Attachment	Compatible Battery Pack
	-25°C to 40°C	Not required	4S-14S
	-25°C to 60°C	Required**	4S-14S
	-25°C to 70°C	Required**	4S-6S
Storage Temperature	-40°C to 85°C		
Humidity	10%~90% , non-condensing		
Vibration	Operating, MIL-STD-810H, Method 514.6, Category 4		
Shock	Operating, MIL-STD-810H, Method 516.6, Procedure I, Table 516.6-II		
Safety	EN62368-1		
EMC	CE/FCC Class A, according to EN 55032 & EN 55035		

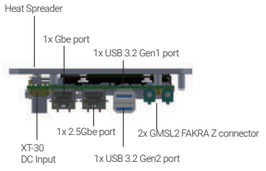
** For sub-zero operating temperature, a wide temperature SSD is required.*
*** Conduction must be utilized by securing the FLYC's heat spreader to a aluminum surface.*

Last updated: 2- Jan 2025

Appearance



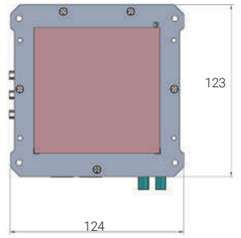
FLYC-300-EC



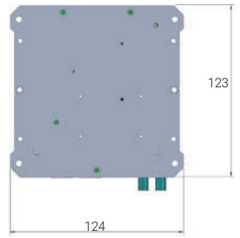
FLYC-300

Dimensions

Unit : mm



FLYC-300-EC



FLYC-300

Ordering Information

Model No.	Product Description
FLYC-300-JON8	Lightweight Drone Mission Computer with NVIDIA OrinTM NX 8GB and M.2 2230 Storage
FLYC-300-EC-JON8	Lightweight Drone Mission Computer with NVIDIA OrinTM NX 8GB, M.2 2230 Storage and Enclosure
FLYC-300-JON16	Lightweight Drone Mission Computer with NVIDIA OrinTM NX 16GB and M.2 2230 Storage
FLYC-300-EC-JON16	Lightweight Drone Mission Computer with NVIDIA OrinTM NX 16GB, M.2 2230 Storage and Enclosure

Optional Accessories

AccsyBx-FAN-FLYC-300	Fan assembly for FLYC-300
Cblkit-FLYC-300	Cblkit-FLYC-300
ThermalPad-90-FLYC-300	Thermal pad for FLYC-300, 90x90x0.5mm
PA-60W-FLYC300	60W AC/DC power adapter 12V/5A DC, Cord end terminals with 2x splicing connector. Operating Temperature : -30-60 °C

PCIe-GL26

AI-enabled 6-port GMSL2 Camera Frame Grabber Card

Key Features

- **6x GMSL2 FAKRA Z inputs supporting automotive GMSL2 cameras**
- **Turnkey solution with pre-installed GMSL2 camera driver for selected cameras**
- **Powered by NVIDIA® Jetson Xavier™ NX bundled with JetPack 4.6.1**
- **21 TOPS AI performance with up to 22 streams simultaneous 1080p@30FPS video encoding capability**
- **x2 Gen3 PCI Express interface offering 10Gb/s total bandwidth**
- **1x GPS PPS input for frame sync calibration**
- **1x isolated CAN 2.0 and 1x RS232**
- **-25°C to 60°C operating temperature with airflow**

Introduction

PCIe-GL26 is an AI-enabled automotive six-port GMSL2 camera frame grabber card. It is a turnkey industrial-grade frame grabber solution that incorporates drivers for selected GMSL2 cameras with video streaming sample codes.

PCIe-GL26 aims to provide superior outdoor vision capability with automotive GMSL2 camera connectivity to advanced x86 autonomous vehicle computing platforms. Automotive GMSL2 cameras are ideal for autonomous vehicle applications due to their advanced features, such as IP67 waterproof, high dynamic range (120dB HDR), auto white balance (AWB), and LED flicker mitigation (LFM). It also benefits computer vision applications in outdoor environments where illumination conditions are constantly changing. Powerful x86 computers with PCIe-GL26 can obtain high-quality images with minimal latency regardless of lighting conditions, from bright sunny days to pitch-black nights.

With a half-length, standard height, and single-slot form factor, PCIe-GL26 can be accommodated in most host computers with a PCIe expansion. With pre-built sample codes, a host computer can install up to four PCIe-GL26 cards and support up to 24x GMSL2 camera streams. Featuring a unique synchronization mechanism, it is capable of acquiring images from six GMSL2 cameras simultaneously within microseconds of channel-to-channel skew. It can also accept a GPS PPS signal to align image data with LIDAR or PCIe-GL26 in another host machine.

Powered by Jetson Xavier™ NX, PCIe-GL26 is much more than just a GMSL2 frame grabber card. With 21 TOPS AI performance, 6x GMSL2 camera inputs, 1x GPS PPS input, 1x RS232, and 1x isolated CAN 2.0, PCIe-GL26 is an AI camera sensor hub capable of sensor fusion and data pre-processing for ADAS or autonomous vehicles.

Specifications

System Core	
Processor	NVIDIA® Jetson Xavier™ NX System-on-Module (SOM), comprising of NVIDIA® Volta GPU and Carmel CPU
Memory	8GB/ 16GB LPDDR4x (Xavier NX 8GB/ 16GB) @ 1600/ 1866 MHz (15W/ 20W TDP mode)
eMMC	16GB eMMC 5.1 on SOM
Deployment I/O Interface	
Bus Interface	x2, Gen3 PCI Express
GMSL2	6x GMSL2 ports (3Gbps) FAKRA Z connectors
CAN bus	1x isolated CAN 2.0 port
Serial Port	1x RS-232 port
Isolated DIO	1x GPS PPS input
Development I/O Interface	
Ethernet port	1x Gigabit Ethernet
USB	2x USB 2.0 ports 1x micro USB (OTG)
Video Port	1x DisplayPort, supporting 3840x2160 at 60Hz
DC Input	12V DC power input (for development only)
Internal I/O Interface	
M.2 NVMe	1x M.2 2242 M key socket (PCIe Gen3 x1) for NVMe SSD
Mechanical	
Dimension	167.7 mm (W) x 111 mm (H)
Weight	0.43kg
Environmental	
Operating Temperature	-25°C to 60°C with airflow (20W TDP mode) *
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
EMC	CE Class A, according to EN 55032/55035 FCC Class A, according to FCC Part 15, Subpart B

** For sub-zero and over 60°C operating temperature, a wide temperature NVMe is required.*

Ordering Information

Model No.	Product Description
PCIe-GL26-JXN8	AI-enabled 6-port GMSL2 camera frame grabber card powered by Jetson Xavier NX (8GB)
PCIe-GL26-JXN16	AI-enabled 6-port GMSL2 camera frame grabber card powered by Jetson Xavier NX (16GB)

Optional Accessories

PA-60W-OW	60W AC/ DC power adapter 12V/ 5A; cord end terminals for terminal block, operating temperature: -30 to 60°C
FK-FF-CABLE-7M	7M FAKRA cable for cameras with male FAKRA connector; the waterproof end is black
AC-IMX390-H60	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 63.9°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H120	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 120.6°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-IMX390-H190	Sony IMX390 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 186°; IP67+IP69K; -40°C to 85°C operating temperature; male FAKRA connector; active alignment; without lens cap
AC-AR0233-H60	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 60°; IP67; -40°C to 85°C operating temperature; male FAKRA connector
AC-AR0233-H120	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 118°; IP67; -40°C to 85°C operating temperature; male FAKRA connector
AC-AR0233-H190	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 30fps; LFM; HFOV 196°; IP67; -40°C to 85°C operating temperature; male FAKRA connector; without lens cap
AC-AR0233-H60-60FPS	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 60fps; LFM; HFOV 60°; IP67; -40°C to 70°C operating temperature; male FAKRA connector
AC-AR0233-H120-60FPS	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 60fps; LFM; HFOV 118°; IP67; -40°C to 70°C operating temperature; male FAKRA connector
AC-AR0233-H190-60FPS	Onsemi AR0233 CMOS sensor camera; 1920x1080 @ 60fps; LFM; HFOV 196°; IP67; -40°C to 70°C operating temperature; male FAKRA connector; without lens cap

PCIe-NX154PoE

100 TOPS Intelligent Frame Grabber Card with 4x PoE+ ports for IVA or AI Inspection

Key Features

- **Powered by NVIDIA® Jetson Orin™ NX bundled with JetPack 5.1.1**
- **Single-slot half-length PCIe card form factor**
- **4x PoE+ 2.5 GbE ports with a 50W total power budget**
- **100 TOPS AI inference performance capable of up to four simultaneous streams of 4K@30FPS video decoding**
- **1x isolated RS-485 and 1x RS-232**
- **x1 Gen2 PCI Express interface offering 2.5Gb/s total bandwidth**
- **-25°C to 60°C operating temperature with airflow (No throttling at 60°C with Orin NX 20W TDP mode)**
- **Compatible with Windows and Linux host computers**

Introduction

PCIe-NX154PoE is an intelligent 4-port 2.5GbE PoE+ frame grabber card fueling 100 TOPS AI inference performance for modern vision inspection, intelligent video analytics and surveillance/ security applications. Powered by NVIDIA's Jetson Orin NX system-on-module, PCIe-NX154PoE delivers 100 INT8 TOPS AI performance via its 1024 CUDA cores, 32 Tensor cores and 2 NVDLA® engines. It also features four 2.5GbE PoE+ ports with a 50W total PoE power budget to connect and power industrial GigE cameras or IP cameras.

With a standard single-slot half-length PCIe card form factor and utilizing 2.5GbE for host communication, PCIe-NX154PoE can be installed into a single PCIe x4 slot while operate on Gen2 x1 signals. This makes it an easy integration into any existing computer system, such as a 19" rack-mount IPC or commercial off-the-shelf box PC. When installed into a vision computer system, PCIe-NX154PoE provides necessary camera connectivity, and it also offloads the deep-learning image processing from host CPU/GPU since image capture, video streaming, pre-processing, and inference are all computed on PCIe-NX154PoE.

Wide temperature -25°C to 60°C operation capability, and compatibility with Windows and Linux operating systems make PCIe-NX154PoE the perfect upgrade for legacy machine vision systems to leverage deep learning-based image processing such as object detection, classification, tracking, facial recognition, etc. It's a revolutionary frame grabber card with intelligence for next-generation computer vision applications.

Specifications

System Core	
Processor	NVIDIA® Jetson Orin™ NX system-on-module (SoM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU
Memory	8GB/ 16GB LPDDR5 @ 3200 MHz on SoM
Storage Interface	
M.2 NVMe	1x M.2 2242 M key socket (PCIe Gen4 x2) for NVMe SSD
Deployment I/O Interface	
Bus Interface	x1, Gen2 PCI Express
PoE	4x IEEE 802.3at PoE+. Max 25.5W per port. Total 50W power budget for 4 ports
Ethernet	4x 2.5GBASE-T Ethernet port[1]
Serial Port	1x RS-232 port and 1x isolated RS-485 port
Development I/O Interface	
Ethernet port	1x Gigabit Ethernet
USB	2x USB 2.0 ports 1x micro USB (OTG)

Development I/O Interface	
Video Port	1x DisplayPort, supporting 3840x2160 at 60Hz
DC Input	12V DC power input (for standalone development, or when total power consumption is more than 66W)
Mechanical	
Dimension	167.7 mm (W) x 111 mm (H)
Weight	0.4 kg
Environmental	
Operating Temperature	-25°C to 60°C with airflow (20W TDP mode) [2]
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

[1] Due to I225-IT specification limitation, for systems running 2.5G Ethernet link speeds, please limit the operating temperature to 60°C.
[2] For sub-zero and over 60°C operating temperature, a wide temperature NVMe is required.

Ordering Information

Model No.	Product Description
PCIe-NX154-JON8	Intelligent Frame Grabber with 4x PoE+ GbE ports by Jetson Orin NX (8GB) and 128GB NVMe with pre-installed system image
PCIe-NX154-JON16	Intelligent Frame Grabber with 4x PoE+ GbE ports by Jetson Orin NX (16GB) and 128GB NVMe with pre-installed system image

Optional Accessories

PA-60W-OW	60W AC/ DC power adapter 12V/ 5A; cord end terminals for terminal block, operating temperature: -30 to 60°C

PCIe-NX156U3

100 TOPS Intelligent Frame Grabber Card with 6x USB 3.2 ports for AI Inspection

Key Features

- **Powered by NVIDIA® Jetson Orin™ NX bundled with JetPack 5.1.1**
- **Single-slot width, standard PCIe half-length card form factor**
- **6x USB 3.2 ports, each port with user-configurable 900mA and 1500mA current limit**
- **100 TOPS AI inference performance**
- **Software-programmable per-port power on/off control**
- **1x isolated RS-485 and 1x RS-232**
- **x1 Gen2 PCI Express interface offering 2.5Gb/s total bandwidth**
- **-25°C to 60°C operating temperature with airflow (No throttling at 60°C with Orin NX 20W TDP mode)**
- **Compatible with Windows and Linux host computers**

Introduction

PCIe-NX156U3 is an intelligent 6-port USB 3.2 frame grabber card powered by NVIDIA's Jetson Orin NX designed to enable AI capabilities for modern vision inspections. It delivers 100 INT8 TOPS AI performance via its 1024 CUDA cores, 32 Tensor cores, and 2 NVDLA® engines. It also features two USB 3.2 Gen2 ports and four USB 3.2 Gen1 ports; each port provides 10 Gbps (Gen2) or 5 Gbps (Gen1) data bandwidth, and up to 1500mA current for USB camera connectivity.

PCIe-NX156U3 aims to enable AI inference and increase USB camera connectivity for existing 19" rack-mount or commercial off-the-shelf box AOI systems. With a standard single-slot half-length PCIe card form factor, PCIe-NX156U3 communicates with the host via the PCIe x4 slot Gen2 x1 signal. Its AI capabilities offloads deep-learning vision computing from the host computer, actions such as image capture, pre-processing, and inference are all performed by PCIe-NX156U3 while utilizing minimum host computer resources.

Capable of wide temperature -25°C to 60°C operation and Windows and Linux OS compatibility make PCIe-NX156U3 the perfect upgrade for legacy machine vision systems to leverage deep learning-based image processing such as package inspection, object sorting, surface defect detection, assembly verification, and robotic guidance, etc. It is a revolutionary AI-enabling frame grabber card for next-generation inspection applications.

Specifications

System Core	
Processor	NVIDIA® Jetson Orin™ NX system-on-module (SoM), comprising NVIDIA® Ampere GPU and ARM Cortex CPU
Memory	8GB/ 16GB LPDDR5 @ 3200 MHz on SoM
Storage Interface	
M.2 NVMe	1x M.2 2242 M key socket (PCIe Gen4 x2) for NVMe SSD
Deployment I/O Interface	
Bus Interface	x1, Gen2 PCI Express
USB	2x USB 3.2 Gen2 (10 Gbps) ports 4x USB 3.2 Gen1 (5 Gbps) ports
Serial Port	1x RS-232 port and 1x isolated RS-485 port
Development I/O Interface	
Ethernet port	1x Gigabit Ethernet
USB	2x USB 2.0 ports 1x micro USB (OTG)

Deployment I/O Interface	
Video Port	1x DisplayPort, supporting 3840x2160 at 60Hz
DC Input	12V DC power input (for standalone development, or when total power consumption is more than 66W)
Mechanical	
Dimension	167.7 mm (W) x 111 mm (H)
Weight	0.4 kg
Environmental	
Operating Temperature	-25°C to 60°C with airflow (20W TDP mode) *
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

** For sub-zero and over 60°C operating temperature, a wide temperature NVMe is required.*

Ordering Information

Model No.	Product Description
PCIe-NX156-JON8	Intelligent Frame Grabber with 6x USB 3.2 ports by Jetson Orin NX (8GB) and 128GB NVMe with pre-installed system image
PCIe-NX156-JON16	Intelligent Frame Grabber with 6x USB 3.2 ports by Jetson Orin NX (16GB) and 128GB NVMe with pre-installed system image

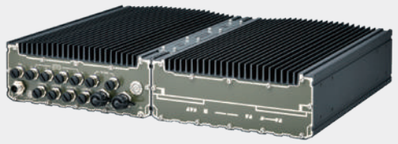
Optional Accessories

PA-60W-OW	60W AC/ DC power adapter 12V/ 5A; cord end terminals for terminal block, operating temperature: -30 to 60°C

SEMIL™

SEMIL-2000GC Series

2U 19" rack mount IP69K waterproof computer including NVIDIA® L4, supporting Intel® 14th/ 13th/ 12th-Gen Core™ processor with 2x M12 10GbE and 4x M12 PoE+ ports



Key Features

- **IP69K waterproof GPU computer with NVIDIA® L4 GPU**
- **-40°C to 70°C wide-temperature fanless operation**
- **2x 10GbE, 1x GbE, and 4x 2.5GbE PoE+ via M12 X-coded connectors**
- **2x SocketCAN and 2x USB3.2 Gen1 Type-C w/ DP alternative mode**
- **8V to 48V wide-range DC input with reverse polarity protection and built-in ignition power control**
- **MIL-STD-810H compliant**

**R.O.C Patent No. I697759*
**CN Patent Pending*

Introduction

SEMIL-2000GC is an extreme-rugged IP69K dustproof and waterproof edge AI platform in a 2U 19" rack-mount form factor. SEMIL- 2000GC incorporates Neousys' best-in-class thermal design to ensure fanless maximum GPU performance in wide range -40°C to 70°C temperatures. The system is also integrated with an NVIDIA® L4 GPU that offers up to 2.5 times the performance over Tesla T4.

Powered by Intel's 14th/ 13th/ 12th-Gen platform, SEMIL-2000GC benefits from Intel® 7 photolithography with performance and efficient core hybrid performances while supporting up to 64 GB DDR5 memory.

SEMIL-2000GC adopts a corrosion-proof stainless steel and aluminum chassis to counteract moisture and salinity. By utilizing M12 connectors, it offers extremely rugged connections in shock and vibration environments with two CAN bus 2.0 with SocketCAN driver, two USB 3.2, seven Ethernet (including two 10GbE), and four 802.3at PoE+ ports to supply 25.5W of power per port to connected compatible devices. Internally, there is an M.2 M-key socket to support NVMe SSD and mini-PCIe sockets for extending feature sets. Additionally, SEMIL-2000GC features two 2.5" SATA SDD/ HDD accommodation, 8-48V wide-range DC input with ignition power control, and it is also in compliance with MIL-STD-810H standards.

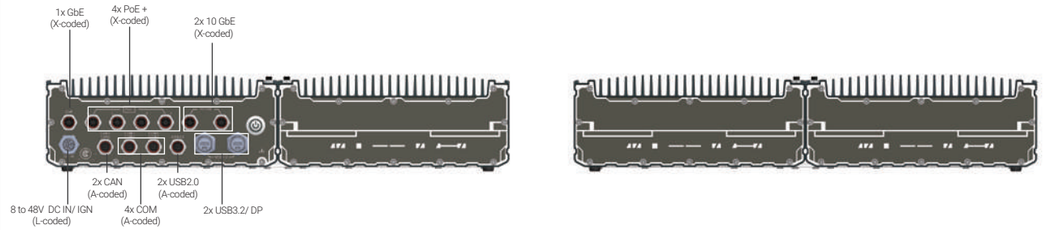
Specifications

System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP)[1][2] - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	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)	
Acceleration GPU	NVIDIA® L4 GPU	
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet Port	2x 10GbE Ethernet by X550-AT2 (with WoL) (M12 X-coded) 4x 2.5GbE Ethernet by Intel I226-IT (PoE+) (M12 X-coded) 1x GbE Ethernet by Intel I219-LM (with WoL) (M12 X-coded)	
PoE+	4x IEEE 802.3at PoE+ PSE with 100 W total power budget	
CAN Bus	2x isolated CAN 2.0 port, supporting SocketCAN in Linux	
USB	2x Type-C USB 3.2 Gen1x1 (5Gbps) ports (shared DisplayPort) 2x USB 2.0 ports (M12 A-coded)	
Video Port	2x Type-C USB connector supporting DP output (shared USB3.2 Gen1x1)	
Serial Port	2x isolated 3-wire RS-232 ports (COM1/ COM2) 1x isolated 3-wire RS232 (COM3) & 1x RS-422/ 485 port (COM4)	
Storage Interface		
SATA HDD	2x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1	
M.2	1x M.2 2280 M key NVMe socket (PCIe Gen4x4) for NVMe SSD	

Expansion Bus	
Mini PCI-E	3x full-size mini PCI Express socket with SIM slot
M.2	1x M.2 2242/3052 B key socket with dual SIM slot for M.2 5G/ 4G module 1x M.2 2230 E key socket for Wi-Fi
Power Supply	
DC Input	8V to 48V DC input, with reverse polarity protection (M12 L-coded)
Ignition Control	Built-in ignition power control (IGN/ GND signal via M12 L-coded connector)
Mechanical	
Dimension	440mm (W) x 310mm (D) x 90.5mm (H) (excl. rack-mount bracket)
Weight	12 kg
Mounting	Rack-mounting (standard) and wall-mounting (standard)
Environmental	
Operating Temperature	**With 35W CPU** -40°C to 70°C **With CPU operating >= 65W CPU** -40°C to 70°C (configured as 35W TDP mode) -40°C to 60°C (configured as 65W TDP mode)
Storage Temperature	-40°C ~85°C
Humidity	10%~90% , non-condensing
Vibration	MIL-STD-810H, 514.8C-IV. Category 4
Shock	MIL-STD-810H, 516.8 Procedure I
EMC	EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035
Ingress Protection	IP69K

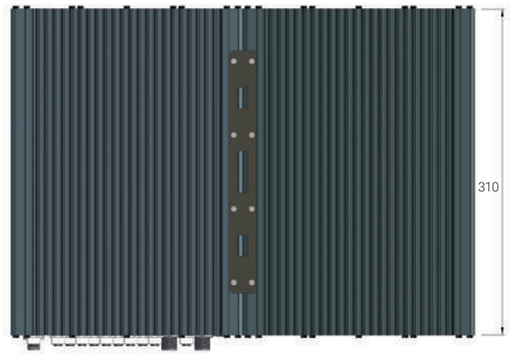
Last updated: 18 - Dec 2024

Appearance



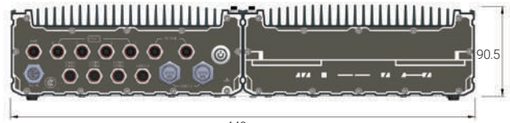
Dimensions

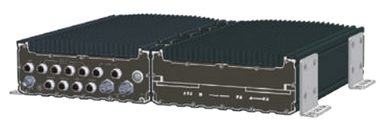
Unit : mm



Mounting Configuration

▲ SEMIL 19" rack-monut





▲ SEMIL wall-mount

Ordering Information

Model No.	Product Description
SEMIL-2047GC	19" rack mount IP69K waterproof computer including NVIDIA® L4, supporting Intel® 14th/ 13th/ 12th-Gen Core™ processor with 2x M12 10GbE and 4x M12 PoE+ ports

Optional Accessories

PA-280W-CW6P-2P	280W AC-DC power adapter 24V 11.67A, 85~264VAC, -30~+70°C w/ Wafer FML6P to 2P End Terminal cable for AWP/SEMIL
PA-600W-C4PY-4P	600W AC-DC power adapter 24V 25A, 85~264VAC, -20~+70°C, w/ 4PY Terminal to 4P End Terminal cable for AWP/SEMIL

SEMIL-2000 Series

2U 19"/2 rack mount IP69K waterproof computer supporting Intel® 14th / 13th/ 12th-Gen Core™ processor with 2x M12 10GbE and 4x M12 PoE+ ports

Key Features

- **IP69K waterproof computer**
- **-40°C to 70°C wide-temperature fanless operation**
- **2x 10GbE, 1x GbE, and 4x 2.5GbE PoE+ via M12 X-coded connectors**
- **2x SocketCAN and 2x USB3.2 Gen1 Type-C w/ DP alternative mode**
- **8V to 48V wide-range DC input with reverse polarity protection and built-in ignition power control**
- **MIL-STD-810H compliant**

**R.O.C Patent No. I697759*
**CN Patent Pending*

Introduction

SEMIL-2000 is an extreme-rugged embedded platform with IP69K dustproof and waterproof design in a 2U 19"/2 rack-mount form factor. SEMIL-2000 features Neousys' best-in-class thermal design to ensure fanless operation from -40°C to 70°C wide-range temperatures, two 5Gbps Type-C ports with alternative DisplayPort signal outputs.

SEMIL-2000 is powered by Intel's 14th/ 13th/ 12th-Gen platform. The platform benefits from Intel® 7 photolithography, the latest Core™ desktop processors come with a hybrid configuration consisting of performance and efficient cores, and it can support up to 64GB DDR5 memory.

The system adopts a corrosion-proof stainless steel and aluminum chassis to counteract moisture and salinity. Utilizing all M12 connectors to guarantee extreme-rugged connection in shock and vibration environments, it offers a variety of I/O connectivity, two CAN bus 2.0 with SocketCAN driver, two USB 3.2, seven Ethernet (including two 10GbE), and four 802.3at PoE+ ports to supply 25.5W of power per port to connected compatible devices. Internal expansion-wise, it has an M.2 M-key socket to support NVMe SSD and mini-PCIe sockets for extending feature sets. Additionally, SEMIL-2000 features two 2.5" SATA SDD/ HDD accommodation, 8-48V wide-range DC input with ignition power control, and it is in compliance with MIL-STD-810H standards.

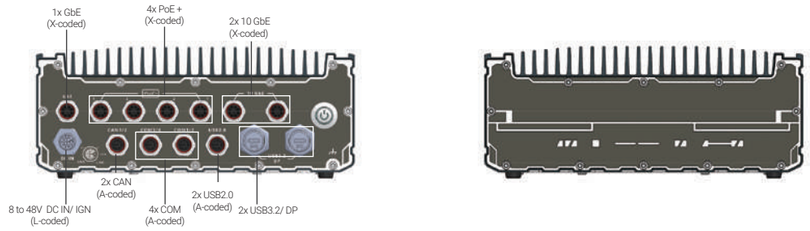
Specifications

System Core		
Processor	Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) - Intel® Core™ i9-14900/ i9-14900T - Intel® Core™ i7-14700/ i7-14700T - Intel® Core™ i5-14500/ i5-14400/ i5-14500T - Intel® Core™ i3-14100/ i3-14100T	
	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)	
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)	
AMT	Supports Intel vPro/ AMT 16.0	
TPM	Supports dTPM 2.0	
I/O Interface		
Ethernet Port	2x 10GbE Ethernet by X550-AT2 (with WoL) (M12 X-coded) 4x 2.5GbE Ethernet by Intel I226-IT (PoE+) (M12 X-coded) 1x GbE Ethernet by Intel I219-LM (with WoL) (M12 X-coded)	
PoE+	4x IEEE 802.3at PoE+ PSE with 100 W total power budget	
CAN Bus	2x isolated CAN 2.0 port, supporting SocketCAN in Linux	
USB	2x Type-C USB 3.2 Gen1x1 (5Gbps) ports (shared DisplayPort) 2x USB 2.0 ports (M12 A-coded)	
Video Port	2x Type-C USB connector supporting DP output (shared USB3.2 Gen1x1)	
Serial Port	2x isolated 3-wire RS-232 ports (COM1/ COM2) 1x isolated 3-wire RS232 (COM3) & 1x RS-422/ 485 port (COM4)	
Storage Interface		
SATA HDD	2x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1	
M.2	1x M.2 2280 M key NVMe socket (PCIe Gen4x4) for NVMe SSD	

Expansion Bus	
Mini PCI-E	3x full-size mini PCI Express socket with SIM slot
M.2	1x M.2 2242/3052 B key socket with dual SIM slot for M.2 5G/ 4G module 1x M.2 2230 E key socket for Wi-Fi
Power Supply	
DC Input	8V to 48V DC input, with reverse polarity protection (M12 L-coded)
Ignition Control	Built-in ignition power control (IGN/ GND signal via M12 L-coded connector)
Mechanical	
Dimension	220mm (W) x 310mm (D) x 90.5mm (H)
Weight	6 kg
Mounting	Rack-mounting (optional) and wall-mounting (standard)
Environmental	
Operating Temperature	**With 35W CPU** -40°C to 70°C **With CPU operating >= 65W CPU** -40°C to 70°C (configured as 35W TDP mode) -40°C to 60°C (configured as 65W TDP mode)
Storage Temperature	-40°C ~85°C
Humidity	10%~90% , non-condensing
Vibration	MIL-STD-810H, 514.8C-IV. Category 4
Shock	MIL-STD-810H, 516.8 Procedure I
EMC	EN 50121 (EN 50155 EMC) CE/FCC Class A, according to EN 55032 & EN 55035
Ingress Protection	IP69K

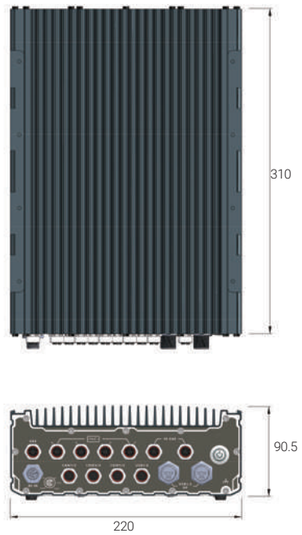
Last updated: 18 - Dec 2024

Appearance



Dimensions

Unit : mm



Ordering Information

Model No.	Product Description
SEMIL-2007	19"/2 rack mount IP69K waterproof computer supporting Intel® 14th/ 13th/ 12th-Gen Core™ processor with 2x M12 10GbE and 4x M12 PoE+ ports

Optional Accessories

PA-280W-CW6P-2P	280W AC-DC power adapter 24V 11.67A, 85~264VAC, -30~+70°C w/ Wafer FML6P to 2P End Terminal cable for AWP/SEMIL
PA-600W-C4PY-4P	600W AC-DC power adapter 24V 25A, 85~264VAC, -20~+70°C, w/ 4PY Terminal to 4P End Terminal cable for AWP/SEMIL
JPlate-SL	Joint plate for dual SEMIL assembly (for SEMIL-2000)
Rmkit-SL	Rack mount for single SEMIL (for SEMIL-2000)

SEMIL-1700GC Series

IP67 Waterproof GPU Computer supporting NVIDIA® RTX™ A2000 or L4 and Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU with All M12 Connectors

Key Features

- **IP67 waterproof GPU computer with NVIDIA® RTX™ A2000/ L4**
- **Intel® Xeon® E or 9th/ 8th-Gen Core™ i7/ i5/ i3 CPU**
- **Patented waterproof 2U 19" chassis for rack or wall-mount***
- **Guaranteed non-throttling GPU performance up to 62°C ambient**
- **Up to eight 802.3at Gigabit PoE+ ports via M12 X-coded connectors**
- **VGA, USB 2.0 and COM ports via M12 A-coded connectors**
- **8 to 48V wide-range DC input with built-in ignition power control**
- **MIL-STD-810G and EN 50155 certified**

**R.O.C Patent No. I697759*
**CN Patent Pending*

Introduction

SEMIL-1700GC series is one of the world's first IP67-rated, waterproof and dustproof inference server with pre-installed NVIDIA® RTX™ A2000/ L4 for the most demanding environments. It is a brand new page in Neousys' chapter of innovations as it represents a new level of robustness for rugged edge AI solutions. Coupled with Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU, the system delivers excellent CPU and GPU performances for advanced edge AI applications in various environmental settings. SEMIL-1700GC series features Neousys' patented system architecture* to guarantee -40°C to 70°C fanless operation in a rack or wall-mountable 2U 19" enclosure.

SEMIL-1700GC series features a sophisticated thermal design to dissipate the heat generated by RTX™ A2000/ L4 GPU to ensure maximum GPU performance in high-temperature environments. It has a corrosion-proof, stainless steel/ aluminum chassis with molded o-rings plus patented fusion mechanism design to offer extraordinary durability and watertight construction. SEMIL-1700GC series offers a variety of I/O connectivities, including 802.3at Gigabit PoE+, VGA, USB, COM ports and optional 10G Ethernet, all using M12 connectors for water-proof and extreme-rugged connectivity in shock and vibration conditions. Additionally, it features M.2 for NVMe SSD, 2.5" SATA storage accommodation, 8 to 48V wide-range DC input with ignition power control and complies with MIL-STD-810G and EN 50155.

The inference acceleration of rugged GPU computers actualized real-time AI inference applications at the edge, where extremely rough conditions are expected. By combining powerful CPU/ GPU, robust IP67 protection, true fanless wide-temperature operation, rugged M12 connectors, and standard 2U 19" rack, SEMIL-1700GC series reveals unprecedented possibilities of deploying AI to places that have yet to be reached.

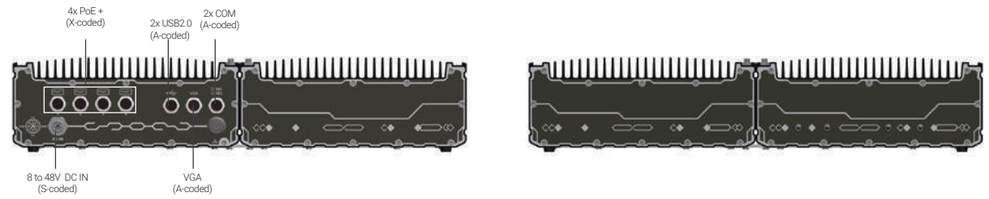
Specifications

	SEMIL-1724GC	SEMIL-1728GC	SEMIL-1748GC
System Core			
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2278GE (8C/16T) / 2278GEL (8C/16T) / 2176G (6C/12T) - i7-9700E, i7-9700TE, i7-8700, i7-8700T - i5-9500E, i5-9500TE, i5-8500, i5-8500T - i3-9100E, i3-9100TE, i3-8100, i3-8100T		
Chipset	Intel® C246 platform controller hub		
Graphics	Integrated Intel® UHD Graphics 630		
Acceleration GPU	NVIDIA® RTX™ A2000		NVIDIA® L4
Memory	Up to 64 GB ECC/ non-ECC DDR4-2666/ 2400 SDRAM (two SODIMM sockets)		
AMT	Supports AMT 12.0		
TPM	Supports TPM 2.0		
I/O Interface			
PoE+	1x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I219 (M12 X-coded)		
	3x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 (M12 X-coded)	7x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 (M12 X-coded)	
10 GbE Port (Build Option)	Optional: 1x 10 GbE port by Intel® X550AT controller (M12 X-coded)**		
Native Video Port	1x VGA (M12 A-coded), supporting 1920 x 1200 resolution		
Series Port	2x 3-wires RS-232 ports COM1 & COM2 (M12 A-coded)		
USB	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	4x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	
Audio	-	1x mic-in and speaker-out (M12 A-coded)	
Storage Interface			
SATA HDD	2x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1		
mSATA	2x full-size mSATA port (mux with mini-PCIe)		
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation		

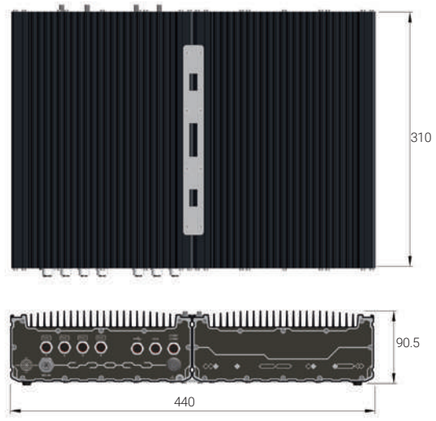
	SEMIL-1724GC	SEMIL-1728GC	SEMIL-1748GC
Expansion Bus			
Mini PCI-E	2x full-size mini PCI Express sockets (mux with mSATA)	2x full-size mini PCI Express socket (mux with mSATA) 2x full-size mini PCI Express socket	
Power Supply			
DC Input	8 to 48V DC input (M12 S-coded)		
Ignition Control	Built-in ignition power control (IGN/ GND signal via M12 serial port connector)		
Mechanical			
Dimension	440mm (W) x 310mm (D) x 90.5mm (H) (excl. rack-mount bracket)		
Weight	12 kg	12.2 kg	
Mounting	Rack-mounting and wall-mounting		
Environmental			
Operating Temperature	**with 35W CPU** -40°C to 70°C **** **with >= 65W CPU** -40°C to 70°C ***/ **** (configured as 35W TDP mode) -40°C to 50°C ***/ **** (configured as 65W TDP mode)		
Storage Temperature	-40°C to 85°C		
Humidity	10% to 90% , non-condensing		
Vibration	MIL-STD-810G, Method 514.7, Category 4		
Shock	MIL-STD-810G, Method 516.7, Procedure I		
EMC	EN-50155, CE/FCC Class A, according to EN 55032 & EN 55035		

*** For optional 10GbE support, please contact Neousys Technology*
**** For Xeon E 2176G/ 2278GE, i7-9700E, and i7-8700 running 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 obtain higher operating temperature.*
***** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required*

Appearance



Dimensions



Mounting Configuration

Unit : mm

▲ SEMIL 19" rack-monuted

▲ SEMIL wall-mounted

Ordering Information

Model No.	Product Description
SEMIL-1724GC-A2K	IP67 waterproof GPU computer supporting NVIDIA® RTX™ A2000 and Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU with 4x M12 PoE+ ports
SEMIL-1728GC-A2K	IP67 Waterproof GPU Computer supporting NVIDIA® RTX™ A2000 and Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU with 8x M12 PoE+ ports
SEMIL-1728GC-10G-A2K	IP67 waterproof GPU computer including NVIDIA® RTX™ A2000 and Intel® Xeon® E or 9th / 8th-Gen Core™ processor with 8x M12 PoE+ ports and 10GbE port
SEMIL-1748GC-10G-ADA	IP67 waterproof GPU computer including NVIDIA® L4 and Intel® Xeon® E or 9th / 8th-Gen Core™ processor with 8x M12 PoE+ ports and 10GbE port

Optional Accessories

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
Cblkit-M12	Please refer to the Cable Kit Guide on the following page

SEMIL-1700 Series

Half-rack IP67 Waterproof Computer Supporting Intel® Xeon® E or 9th/ 8th-Gen Core™ Processor with All M12 Connectors

Key Features

- **Intel® Xeon® E or 9th/ 8th-Gen Core™ i7/ i5/ i3 CPU**
- **Extremely rugged, IP67-rated waterproof and dustproof**
- **-40°C to 70°C wide-temperature fanless operation**
- **2U 19" half-rack form-factor for rack or wall-mount**
- **Up to 8x 802.3at Gigabit PoE+ ports via M12 X-coded connectors**
- **VGA, USB 2.0 and COM ports via M12 A-coded connectors**
- **Patented SuperCAP-based uninterruptible power backup* (SEMIL-1710J)**
- **8 to 48V wide-range DC input with built-in ignition power control**
- **MIL-STD-810G and EN 50155 certified**

**R.O.C Patent No. I598820*

Introduction

SEMIL-1700 series is an extremely rugged 2U half-rack computer with an IP67-rated waterproof and dustproof design. Powered by Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU and coupled with workstation-grade Intel® C246 chipset, it can support up to 64 GB ECC/ non-ECC DDR4 memory. The 2U half-rack form-factor SEMIL-1700 series incorporates Neousys' best-in-class thermal design and offers mounting flexibility where you can wall or rack-mount up to two SEMILs side by side.

SEMIL-1700 adopts a corrosion-proof chassis made of stainless steel and aluminum to counteract against moisture and salinity. Offering a variety of I/O connectivities that utilize M12 connectors to guarantee extremely rugged connections in shock and vibration environments, it has up to eight 802.3at PoE+ ports to supply 25W of power to connected devices. Internal expansion wise, it has an M.2 M-key socket to support NVMe SSD and mini-PCIe sockets for extending feature sets. Additionally, SEMIL-1700 features two 2.5" SATA SDD/ HDD accommodation, 8 to 48V wide-range DC input with ignition power control and complies with MIL-STD-810G and EN 50155.

To top it off, SEMIL-1710J is equipped with Neousys' innovative SuperCAP-based UPS* containing 2500 watt-second stored energy to sustain or safely shut down the system during unforeseen power outages. Protected against water, dust, high/ low temperature, shock/ vibration and power interruption, Neousys' SEMIL-1700 series is set to redefine edge application computing, where ruggedness matter.

Specifications

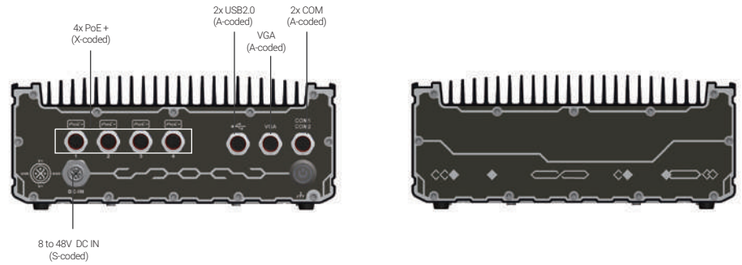
	SEMIL-1704	SEMIL-1714J	SEMIL-1708	SEMIL-1718J
System Core				
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2278GE (8C/16T) / 2278GEL (8C/16T) / 2176G (6C/12T) - i7-9700E, i7-9700TE, i7-8700, i7-8700T - i5-9500E, i5-9500TE, i5-8500, i5-8500T - i3-9100E, i3-9100TE, i3-8100, i3-8100T			
Chipset	Intel® C246 platform controller hub			
Graphics	Integrated Intel® UHD Graphics 630			
Memory	Up to 64 GB ECC/ non-ECC DDR4-2666/ 2400 SDRAM (two SODIMM sockets)			
AMT	Supports AMT 12.0			
TPM	Supports TPM 2.0			
I/O Interface				
PoE+	1x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I219 (M12 X-coded)			
	3x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 (M12 X-coded)		7x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 (M12 X-coded)	
10 GbE Port (Build Option)	Optional: 1x 10 GbE port by Intel® X550AT controller (M12 X-coded)**			
Native Video Port	1x VGA (M12 A-coded), supporting 1920 x 1200 resolution			
Series Port	2x 3-wires RS-232 ports COM1 & COM2 (M12 A-coded)			
USB	2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)		4x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	
Audio	-		1x mic-in and speaker-out (M12 A-coded)	
Storage Interface				
SATA HDD	2x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1			
mSATA	2x full-size mSATA port (mux with mini-PCIe)			
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation			

	SEMIL-1704	SEMIL-1714J	SEMIL-1708	SEMIL-1718J
Expansion Bus				
Mini PCI-E	2x full-size mini PCI Express socket (mux with mSATA)		2x full-size mini PCI Express socket (mux with mSATA) 2x full-size mini PCI Express socket	
Power Supply				
DC Input	8 to 48V DC input (M12 S-coded)			
Ignition Control	Built-in ignition power control (IGN/ GND signal via M12 serial port connector)			
SuperCAP UPS				
Capacity	-	2500 watt-second	-	2500 watt-second
Mechanical				
Dimension	220mm (W) x 310mm (D) x 90.5mm (H)			
Weight	5.8 kg	6 kg	5.9 kg	6.2 kg
Mounting	Rack-mounting and wall-mounting			
Environmental				
Operating Temperature	**with 35W CPU** -40°C to 70°C **** **with >= 65W CPU** -40°C to 70°C ***/ **** (configured as 35W TDP mode) -40°C to 50°C ***/ **** (configured as 65W TDP mode)			
Storage Temperature	-40°C to 85°C			
Humidity	10% to 90% , non-condensing			
Vibration	MIL-STD-810G, Method 514.7, Category 4			
Shock	MIL-STD-810G, Method 516.7, Procedure I			
EMC	EN-50155, CE/FCC Class A, according to EN 55032 & EN 55035			

*** For optional 10GbE support, please contact Neousys Technology*
**** For Xeon E 2176G/ 2278GE, i7-9700E, and i7-8700 running 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 obtain higher operating temperature.*
***** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required*

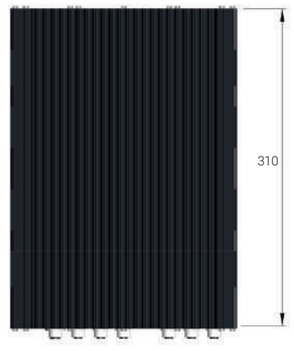
Last updated: 07-Dec 2020

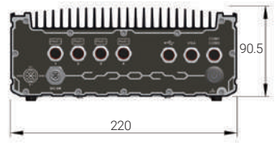
Appearance



Dimensions

Unit : mm

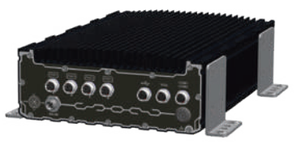




Mounting Configuration

▲ Dual SEMIL 19" rack-monuted

▲ Dual SEMIL 19" wall-monuted



▲ SEMIL wall-mounted

Ordering Information

Model No.	Product Description
SEMIL-1704	Half-rack IP67 waterproof computer supporting Intel® Xeon® E or 9th / 8th-Gen Core™ processor with 4x M12 PoE+ ports
SEMIL-1714J	Half-rack IP67 waterproof computer supporting Intel® Xeon® E or 9th / 8th-Gen Core™ processor with 4x M12 PoE+ ports and SuperCAP UPS
SEMIL-1708	Half-rack IP67 waterproof computer supporting Intel® Xeon® E or 9th / 8th-Gen Core™ processor with 8x M12 PoE+ ports
SEMIL-1718J	Half-rack IP67 waterproof computer supporting Intel® Xeon® E or 9th / 8th-Gen Core™ processor with 8x M12 PoE+ ports and SuperCAP UPS

Optional Accessories

Joint-plate	Joint plate for dual SEMIL assembly
M12-Cable-Kit	4x PoE+, VGA, 2x USB2.0 (by Y-cable), 2x COM (by Y-cable) and DC power cables
PA-160W-OW	160W AC-DC power adapter, 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.
PA-120W-OW	120W AC/DC power adapter, 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.

SEMIL-1300GC Series

Wide-temperature Fanless GPU Computer supporting NVIDIA® RTX™ A2000 and Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU with M12 connectors

Key Features

- **Fanless GPU computer with NVIDIA® RTX™ A2000**
- **Guaranteed non-throttling GPU performance up to 62°C ambient**
- **Intel® Xeon® E or 9th/ 8th-Gen Core™ i7/ i5/ i3 CPU**
- **Patented 2U 19" chassis for rack or wall-mount***
- **Four 802.3at Gigabit PoE+ ports via M12 X-coded connectors**
- **VGA, USB 2.0 and COM ports via M12 A-coded connectors**
- **1x DisplayPort and 3x USB 3.1 Gen1 ports**
- **8 to 48V wide-range DC input with built-in ignition power control**
- **CE, FCC and EN 50155 certified**

R.O.C Patent No. I697759
CN Patent Pending

Introduction

SEMIL-1300GC series is the world's first wide-temperature fanless edge AI computer supporting NVIDIA® RTX™ A2000 for demanding environments. Coupled with Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU, the system delivers excellent CPU and GPU performances for modern edge AI applications. SEMIL-1300GC series features Neousys' patented thermal system architecture* to guarantee -40°C to 70°C fanless operation in a rack-mountable or wall-mountable 2U 19" enclosure.

SEMIL-1300GC series features an advanced passive cooling design to ensure the CPU/ GPU does not throttle when operating in high-temperature environments. Compatible with a RTX™ A2000 GPU, users can utilize the scalable GPU performance that offers up to 8.0 TFLOPS in FP32 or 63.9 TOPS in INT8. The system leverages M12 connectors for Gigabit PoE+, USB 2.0, VGA and COM ports to offer rugged cable connectivity. Other high-speed computer I/Os include DisplayPort, USB 3.1 Gen1, optional 10G Ethernet and storage interfaces such as an M.2 for NVMe SSD and SATA ports, making SEMIL-1300GC expandable and versatile.

The GPU-powered deep learning systems actualized real-time AI inference applications at the edge by thriving in rough conditions. Combining a RTX™ A2000, wide-temperature fanless design and rugged M12 connectors, the SEMIL-1300GC series reveals unprecedented possibilities of deploying AI to places that have yet to be reached.

Specifications

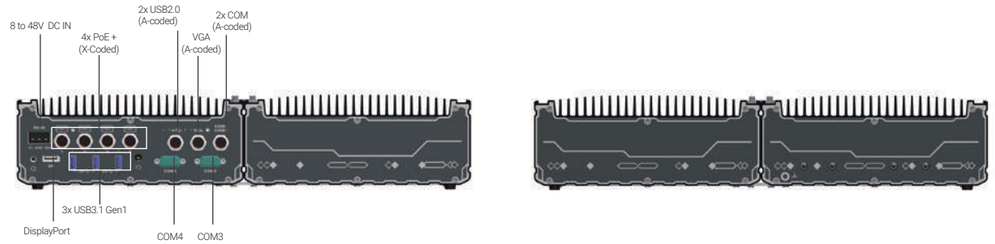
System Core	
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2278GE (8C/16T) / 2278GEL (8C/16T) / 2176G (6C/12T) - i7-9700E, i7-9700TE, i7-8700, i7-8700T - i5-9500E, i5-9500TE, i5-8500, i5-8500T - i3-9100E, i3-9100TE, i3-8100, i3-8100T
Chipset	Intel® C246 platform controller hub
Graphics	Integrated Intel® UHD Graphics 630
Acceleration GPU	NVIDIA® RTX™ A2000 for AI inference
Memory	Up to 64 GB ECC/ non ECC DDR4-2666/ 2400 SDRAM (two SODIMM sockets)
AMT	Supports AMT 12.0
TPM	Supports TPM 2.0
I/O Interface	
PoE+	1x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I219 (M12 X-coded) 3x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 (M12 X-coded)
10 GbE Port (Build Option)	Optional: 1x 10 GbE port by Intel® X550AT controller (M12 X-coded)**
Native Video Port	1x VGA (M12 A-coded), supporting 1920 x 1200 resolution 1x DisplayPort connector, supporting 4096 x 2304 resolution
Series Port	2x 3-wires RS-232 ports COM1 & COM2 (M12 A-coded) 1x software-programmable RS-232/ 422/ 485 port (COM3, DB9) 1x RS-232 port (COM4, DB9)
USB	3x USB 3.1 Gen1 2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Storage Interface	
SATA HDD	2x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
mSATA	2x full-size mSATA port (mux with mini-PCIe)

Storage Interface	
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation
Expansion Bus	
Mini PCI-E	2x full-size mini PCI Express sockets (mux with mSATA) 1x M.2 3042/ 3052 B key socket for selected M.2 4G/ 5G module 1x M.2 2242/ 2252 E key for selected WiFi module
Power Supply	
DC Input	8 to 48V DC input
Ignition Control	Built-in ignition power control
Mechanical	
Dimension	440mm (W) x 310mm (D) x 90.5mm (H) (excl. rack-mount bracket)
Weight	12 kg
Mounting	Rack-mounting and wall-mounting
Environmental	
Operating Temperature	**with 35W CPU** -40°C to 70°C **** **with >= 65W CPU** -40°C to 70°C ***/ **** (configured as 35W TDP mode) -40°C to 50°C ***/ **** (configured as 65W TDP mode)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	MIL-STD-810G, Method 514.7, Category 4
Shock	MIL-STD-810G, Method 516.7, Procedure I
EMC	EN-50155, CE/FCC Class A, according to EN 55032 & EN 55035

** For optional 10GbE support, please contact Neousys Technology*
*** For Xeon E 2176G/ 2278GE, i7-9700E, and i7-8700 running 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 obtain higher operating temperature.*
**** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required*

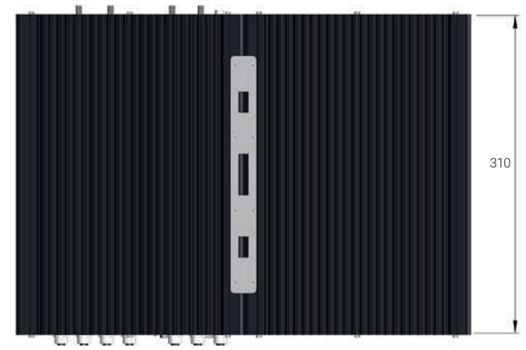
Last updated: 3 - Jan 2024

Appearance



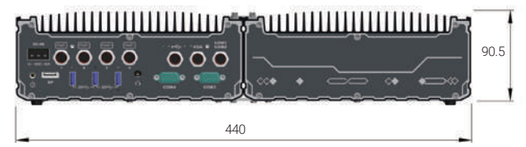
Dimensions

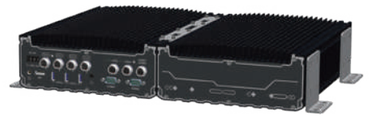
Unit : mm



Mounting Configuration

▲ SEMIL 19" rack-monuted





▲ SEMIL wall-mounted

Ordering Information

Model No.	Product Description
SEMIL-1321GC-A2K	Wide-temperature fanless GPU computer with NVIDIA® RTX™ A2000 GPU and Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU with M12 connectors
SEMIL-1321GC-10G-A2K	Wide-temperature fanless GPU computer including NVIDIA® RTX™ A2000 and Intel® Xeon® E or 9th / 8th-Gen Core™ processor with M12 I/ Os and 10GbE port

Optional Accessories

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.
Cblkit-M12	Please refer to the Cable Kit Guide on the following page

SEMIL-1300 Series

Half-Rack Rugged Fanless Computer Supporting Intel® Xeon® E or 9th/ 8th-Gen Core™ Processor with M12 connectors

Key Features

- **Intel® Xeon® E or 9th/ 8th-Gen Core™ i7/ i5/ i3 CPU**
- **2U half-rack fanless system, -40 °C to 70 °C operation**
- **4x 802.3at Gigabit PoE+, VGA, 2x USB 2.0, 2x COM via M12 connectors**
- **M.2 B key for 4G/ 5G module, M.2 E key for WiFi module**
- **Patented supercapacitor-based uninterruptible power backup* (SEMIL-1311J)**
- **8 to 48V wide-range DC input with built-in ignition power control**
- **CE, FCC and EN 50155 certified**

**R.O.C Patent No. I598820*

Introduction

SEMIL-1300 series is a rugged fanless computer with robust M12 I/O connectors in a standard 2U 19" half-rack form factor enclosure. Powered by Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU and coupled with workstation-grade Intel® C246 chipset, it supports up to 64 GB DDR4 ECC/non-ECC memory and offers flexible mounting options to wall or rack-mount up to two SEMILs side by side.

SEMIL-1300 series incorporates Neousys' best-in-class passive thermal design for proven -40 °C to 70 °C fanless operation. It offers a variety of I/O connectivities utilizing M12 connectors that are reliably robust, cost-effective and can be obtained off-the-shelf. There are also generic I/Os with screw-lock mechanisms to guarantee an extreme-rugged connection in shock and vibration environments. It has four 802.3at PoE+ ports, each supplying 25W of power to the connected device such as an IP or GigE camera. SEMIL-1300 is designed with 4G/5G and WiFi5/WiFi6 wireless connectivity in mind and it supports 8 to 48V wide-range DC input with ignition power control for in-vehicle use while complying with EN 50155.

In addition, SEMIL-1311J is equipped with Neousys' patented SuperCAP-based UPS containing 2500 watt-second stored energy to sustain and safely shut down the system during unforeseen power outages. It is the perfect solution for data protection and applications in unstable power environments. With a standard half-rack design, proven wide temperature operation capability, protected against shock/ vibration and power interruption, Neousys' SEMIL-1300 series is the ideal robust solution for extreme-rugged deployment.

Specifications

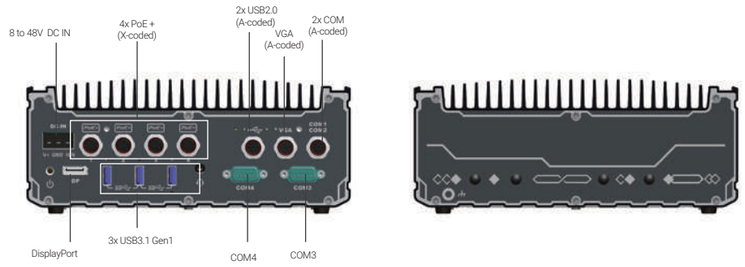
	SEMIL-1301	SEMIL-1311J
System Core		
Processor	Supporting Intel® Xeon® E and 9th/ 8th-Gen CPU (LGA1151 socket) - Xeon E 2278GE (8C/16T) / 2278GEL (8C/16T) / 2176G (6C/12T) - i7-9700E, i7-9700TE, i7-8700, i7-8700T - i5-9500E, i5-9500TE, i5-8500, i5-8500T - i3-9100E, i3-9100TE, i3-8100, i3-8100T	
Chipset	Intel® C246 platform controller hub	
Graphics	Integrated Intel® UHD Graphics 630	
Memory	Up to 64 GB ECC/ non-ECC DDR4-2666/ 2400 SDRAM (two SODIMM sockets)	
AMT	Supports AMT 12.0	
TPM	Supports TPM 2.0	
I/O Interface		
PoE+	1x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I219 (M12 X-coded) 3x IEEE 802.3at (25.5W) Gigabit PoE+ ports by Intel® I210 (M12 X-coded)	
10 GbE Port (Build Option)	Optional: 1x 10 GbE port by Intel® X550AT controller (M12 X-coded)**	
Native Video Port	1x VGA (M12 A-coded), supporting 1920 x 1200 resolution 1x DisplayPort connector, supporting 4096 x 2304 resolution	
Series Port	2x 3-wires RS-232 ports COM1 & COM2 (M12 A-coded) 1x software-programmable RS-232/ 422/ 485 port (COM3, DB9) 1x RS-232 port (COM4, DB9)	
USB	3x USB 3.1 Gen1 2x USB 2.0 (M12 A-coded) 1x USB 2.0 (internal)	
Audio	1x 3.5 mm jack for mic-in and speaker-out	
Storage Interface		
SATA HDD	2x Internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1	
mSATA	2x full-size mSATA port (mux with mini-PCIe)	
M.2	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation	

	SEMIL-1301	SEMIL-1311J
Expansion Bus		
Mini PCI-E	2x full-size mini PCI Express sockets (mux with mSATA) 1x M.2 3042/ 3052 B key socket for selected M.2 4G/ 5G module 1x M.2 2242/ 2252 E key for selected WiFi module	
Power Supply		
DC Input	8 to 48V DC input	
Ignition Control	Built-in ignition power control	
Power Backup		
Capacity	-	2500 watt-second
Mechanical		
Dimension	220mm (W) x 310mm (D) x 90.5mm (H) (excl. rack-mount bracket)	
Weight	5.8 kg	6 kg
Mounting	Rack-mounting and wall-mounting	
Environmental		
Operating Temperature	**with 35W CPU** -40°C to 70°C **** **with >= 65W CPU** -40°C to 70°C ***/ **** (configured as 35W TDP mode) -40°C to 50°C ***/ **** (configured as 65W TDP mode)	
Storage Temperature	-40°C to 85°C	
Humidity	10% to 90% , non-condensing	
Vibration	MIL-STD-810G, Method 514.7, Category 4	
Shock	MIL-STD-810G, Method 516.7, Procedure I	
EMC	EN-50155, CE/FCC Class A, according to EN 55032 & EN 55035	

*** For optional 10GbE support, please contact Neousys Technology*
**** For Xeon E 2176G/ 2278GE, i7-9700E, and i7-8700 running 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 obtain higher operating temperature.*
***** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required*

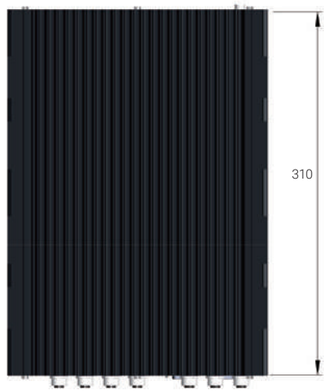
Last updated: 29 - Dec 2020

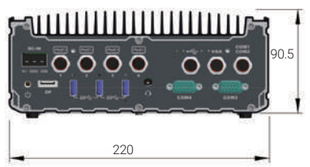
Appearance



Dimensions

Unit : mm





Mounting Configuration

▲ SEMIL 19" rack-monuted

▲ SEMIL wall-mounted

Ordering Information

Model No.	Product Description
SEMIL-1301	Half-Rack Rugged Fanless Computer supporting Intel® Xeon® E or 9th/ 8th-Gen Core™ processor with M12 I/Os
SEMIL-1311J	Half-Rack Rugged Fanless Computer supporting Intel® Xeon® E or 9th/ 8th-Gen Core™ processor with M12 I/Os and SuperCAP UPS

Optional Accessories

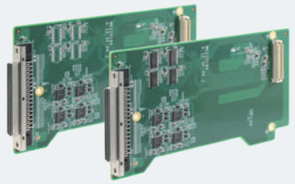
Joint-plate	Joint plate for dual SEMIL assembly
M12-Cable-Kit	4x PoE+, VGA, 2x USB2.0 (by Y-cable), 2x COM (by Y-cable) and DC power cables
PA-160W-OW	160W AC-DC power adapter, 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.
PA-120W-OW	120W AC/DC power adapter, 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature : -30 to 70°C.

Accessories

- Neousys MezIO® Modules
- Optional Cable

MezIO®-C180/ MezIO®-C181

8-port RS-232/ 422/ 485 MezIO® Module



Key Features

- 4x RS-232/422/485 multi-mode ports
- 4x RS-232 ports (C180) or 4x RS-422/485 ports (C181)
- Up to 921.6 Kbps baud rate
- BIOS-configurable mode/termination settings
- Supports Windows 7/8/8.1/10
- SCSI-II 68-pin connector

Specifications

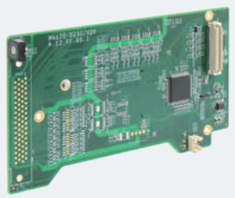
	MezIO®-C180	MezIO®-C181
# of Port	4x RS-232/ 422/ 485 4x RS-232	4x RS-232/ 422/ 485 4x RS-422/ 485
Baud Rate	50 bps to 921600 bps	
FIFO	256-byte TX and RX FIFOs	
ESD Protection	8 kV	
Interface Signals	RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND RS-422: TxD+, TxD-, RxD+, RxD-, GND RS-485: Data+, Data-, GND	
Connector	68-pin SCSI-II female connector	
OS Support	Windows 7/ 8/ 8.1/ 10 and Linux kernel 2.6.32 or later	

Ordering Information

Model No.	Product Description
MezIO®-C180-50	4x RS-232/ 422/ 485 and 4x RS-232 ports MezIO® module, for Nuvo-9000/ Nuvo-7000/ Nuvo-5000/ POC-700/ POC-500/ POC-400/ POC-300 Series
MezIO®-C181-50	4x RS-232/ 422/ 485 and 4x RS-422/ 485 ports MezIO® module, for Nuvo-9000/ Nuvo-7000/ Nuvo-5000/ POC-700/ POC-500/ POC-400/ POC-300 Series
Cbl-S68M-8DB9M-50CM	SCSI-68(M) to 8x DB-9(M) cable, 50 cm

MezIO®-V20

16-mode Ignition Power Control MezIO® Module



Key Features

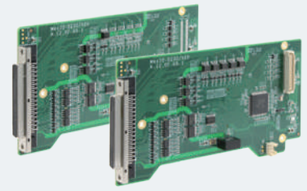
- Ignition power control with 16 predefined on/ off delay modes
- Ultra-low 12 mA ignition-off standby power
- Advanced ignition control features
  - Low-battery protection
  - Guarded power-on/ power-off delay duration
  - System hard-off
  - BIOS POST check
- Supports 12V DC (small vehicle) and 24V DC (bus/ truck) vehicles

Ordering Information

Model No.	Product Description
MezIO®-V20-EP *(Nuvo-9000E/P/DE/ Nuvo-9160GC/ Nuvo-9166GC/ Nuvo-7160GC/ Nuvo-7164GC/ Nuvo-7000E/P/DE/ Nuvo-5026E/ Nuvo-5000E/P Nuvo-5095GC)*	16-mode ignition power control MezIO® module for in-vehicle usage
MezIO®-V20 *(POC-700/ POC-500/ POC-400/ POC-300/ Nuvo-9000LP/ Nuvo-7000LP/ Nuvo-5000LP)*	16-mode ignition power control and 1x mini-PCIe socket MezIO® module for in-vehicle usage

MezIO®-D230/ MezIO®-D220

32/ 16-CH Isolated Digital I/O MezIO® Module



Key Features

- 16-CH isolated DI (D230) or 8-ch isolated DI (D220)
- 16-CH isolated DO (D230) or 8-ch isolated DO (D220)
- 2500 Vrms isolation voltage
- Up to 24V DC operation for DI and DO
- Up to 500 mA sink current on DO channel
- SCSI-II 68-pin connector

Specifications

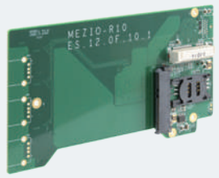
	MezIO®-D230	MezIO®-D220
Isolated Digital Input		
# of Port	16	8
Logic Level	Logic high: 5 to 24 VDC ; Logic low: 0 to 1.5 VDC	
Isolation Voltage	2500 Vrms	
Operation Mode	Polling, COS	
Isolated Digital Output		
# of Channel	16	8
Operation Voltage	Up to 24 VDC	
Sink Current	500 mA for each channel (100% duty)	
Isolation Voltage	2500 Vrms	
Operation Mode	Polling, COS	

Ordering Information

Model No.	Product Description
MezIO®-D230-50	16-CH isolated DI and 16-CH isolated DO MezIO® module, for Nuvo-9000/ Nuvo-7000/ Nuvo-5000/ POC-500/ POC-300 Series
MezIO®-D220-50	8-CH isolated DI and 8-CH isolated DO MezIO® module, for Nuvo-9000/ Nuvo-7000/ Nuvo-5000/ POC-500/ POC-300 Series
Cbl-S68M-S68M-100CM	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

MezIO®-R10

2.5" SATA HDD/ SSD and mini-PCIe Accommodation MezIO® Module



Key Features

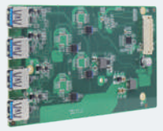
- Accommodates one 2.5" SATA HDD/ SSD
- One full-size mini-PCIe port with SIM socket

Ordering Information

Model No.	Product Description
MezIO®-R11 *(for POC-700/ POC-500/ POC-400/ POC-300 series only)*	MezIO® module with 2.5" SATA HDD/ SSD
MezIO®-R12 *(for POC-700/ POC-500/ POC-400/ POC-300 series only)*	MezIO® module with SATA port for 2.5" HDD/ SSD, 4-CH isolated DI and 4-CH isolated DO

MezIO®-U4

4-Port USB 3.1 MezIO® Module



Key Features

- 4 x USB 3.1 ports by independent Renesas µPD720202 Host Controllers
- Up to 5 Gbps each port (MezIO-U4-50)
- Support up to 900 mA per port

Specifications

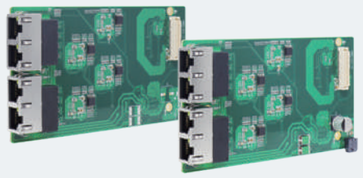
	MezIO®-U4-30	MezIO®-U4-50
USB Ports	4x USB 3.1 ports, compatible with USB 2.0/1.1/1.0	
USB Controller	2 x Renesas µPD720202 Host Controllers	4 x Renesas µPD720202 Host Controllers
USB Connectors	4x USB 3.1 Type-A connectors	
USB Per-Port Current Limit	900mA	
Interface Signals	5 Gbps shared by two ports	5 Gbps for each port

Ordering Information

Model No.	Product Description
MezIO®-U4-30	4-port USB 3.1 MezIO® module for POC-700/ POC-400/ POC-300 series
MezIO®-U4-50	4-port USB 3.1 MezIO® module for POC-500 series, Nuvo-9000 Series, Nuvo-7000 series and Nuvo-5000 series

MezIO® - G4P/ MezIO® -G4

4-Port GbE with 802.3at PoE+ MezIO® Module



Key Features

- 4x gigabit Ethernet ports
- Compliant with 802.3at PoE+ (MezIO-G4P)
- Supporting 9.5 KB jumbo frame

Specifications

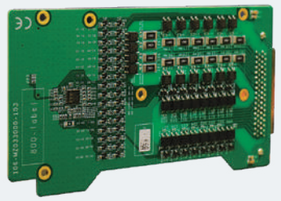
	MezIO® - G4P	MezIO® - G4
Gigabit Ethernet Port	4x GigE ports by 4x Intel® I210 controllers, supporting 9.5 kB jumbo frame	
PoE Capability	Compliant with IEEE 802.3at-2009 (PoE+), each port delivers up to 25.5 W of power	-
Cable Requirement	CAT-5e or CAT-6 cable, 100 meters maximum	

Ordering Information

Model No.	Product Description
MezIO® - G4P	4-Port GbE with 802.3at PoE+ MezIO® module for Nuvo-9000/ Nuvo-7000/ Nuvo-5000 series
MezIO® - G4	4-Port GbE MezIO® module for Nuvo-9000/ Nuvo-7000/ Nuvo-5000 series

MezIO® -D330

16-CH isolated DI and 16-CH isolated DO MezIO® module



Key Features

- 16-CH isolated digital input
- 16-CH isolated digital output
- 2500 Vrms isolation voltage
- Support sink and source wiring type
- Up to 24V DC operation for DI and DO
- Up to 250 mA sink/source current on DO channel
- SCSI-II 68-pin connector

Specifications

Isolated Digital Input	
# of Channels	16
Wiring Type	Sink/ Source mode
Isolation Voltage	2500 Vrms
Logic Level	Logic high: 3.3 to 24 VDC Logic low : 0 to 1.5 VDC
Rated Input Voltage	0V to 24 VDC
Operation Mode	Polling
Isolated Digital Output	
# of Channels	16
Operation Voltage	Sink/ Source mode
Sink Current	1500 Vrms
Operation Voltage	2500 Vrms
Driving Current	250 mA
Operation Mode	Polling

Ordering Information

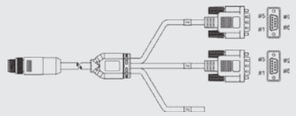
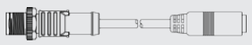
Model No.	Product Description
MezIO® -D330	16-CH isolated DI and 16-CH isolated DO MezIO® module for Nuvo-11000/ Nuvo-9000/ Nuvo-7000/ Nuvo-5000/ POC-700-FT/ POC-700/ POC-500/ POC-400/ POC-300 Series
Cbl-S68M-S68M-100CM	SCSI-68 (Male) to SCSI-68M (Male) cable, for MezIO® DIO card and TB-10, Length: 100CM
TB-10	Terminal board with 68-pin SCSI-II female connector and 68-pole terminal block

List of Optional Cable

Cable	Model Name	Description	Applicable Models
	Cbl-W210F-W210F-100CM	Remote control cable, 2x5 Pin female wafer to 2x5 Pin female wafer length: 100CM	• Nuvo-5000 series • Nuvo-5095GC series • Nuvo-5100VTC series • Nuvo-5608VR
	Cbl-IDC220F-2U2TA-15CM	USB cable, 2x USB(female) to PIN header(20 pin, female), for internal USB port connectivity, length: 15CM	• Nuvo-8000 series • Nuvo-6000 series
	Cbl-U3TA-U3MB-Latch-300CM	USB3 Type-A to Micro-B cable with latched connectors, Length: 300CM	• Nuvo-11000 Series • Nuvo-9000 series • Nuvo-7000 series • Nuvo-7100VTC series • Nuvo-7200VTC series • Nuvis-7306RT series • Nuvis-534RT series • POC-700 series • POC-500 series • POC-400 series • POC-751VTC • POC-551VTC • POC-764VR • POC-451VTC • RGS-8805GC • Nuvo-10208GC • Nuvo-8208GC • Nuvo-8108GC/8108GC-XL • Nuvo-8108GC-QD • Nuvo-8240GC • Nuvo-9160GC series • Nuvo-7160GC series • Nuvo-10000 • Nuvo-8034
	Cbl-U3TA-U3TA-Latch-300CM	USB cable, USB 3.0-A Male with latched to USB 3.0-A Male, Length: 300CM	• Nuvo-11000 Series • Nuvo-9000 series • Nuvo-7000 series • Nuvo-7100VTC series • Nuvo-7200VTC series • Nuvis-7306RT series • Nuvis-534RT series • POC-700 series • POC-500 series • POC-400 series • POC-751VTC • POC-551VTC • POC-764VR • POC-451VTC • RGS-8805GC • Nuvo-10208GC • Nuvo-8208GC • Nuvo-8108GC/8108GC-XL • Nuvo-8108GC-QD • Nuvo-8240GC • Nuvo-9160GC series • Nuvo-7160GC series • Nuvo-10000 • Nuvo-8034
	Cblbr-IDC220F-2U2TA-26.5CM	USB cable, 2x1- Pin header to 2x USB 2.0 with bracket.	• Nuvo-8000 series • Nuvo-6000 series
	Cbl-Pwr4-W2.54F-20CM	Power cable, 4 PIN power connector to wafer 2.5 4P Female, provide 12V to add-on card, length: 20CM	• Nuvo-9000E/DE/P series • Nuvo-7000E/DE/P series • Nuvo-5000E/P series
	Cbl-S68M-S68M-100CM	SCSI-68 (male) to SCSI-68M (male) cable, for MezIO DIO card and TB-10, length: 100CM	• MezIO-D220 • MezIO-D230 • Nuvis-534RT series
	Cbl-S68M-8DB9M-50CM	SCSI-68 (male) to 8x DB9 (male) Cable, for MezIO COM port card, length: 50CM	• MezIO-C180 • MezIO-C181
	Cbl-DB9F-3DB9M-15CM	1x DB9 (female) to 3x DB9 (male), length: 15CM	• Nuvo-8000 series • Nuvo-6000 series • POC-700 series • POC-300 series • POC-500 series
	Cbl-DVII-DVII_VGA-Y-20CM	DVI-I to DVI-D/VGA splitter Y cable, length: 20CM	• POC-300 series
	Cbl-DVID-VGA-15CM	DVI-D to VGA cable, for Nuvo-8000/ Nuvo-6000 series, length: 15CM	• Nuvo-8000 series • Nuvo-6000 series

Cable	Model Name	Description	Applicable Models
	Cbl-RJ45-RJ45-Latch-1000CM	LAN Cable, RJ45(Male) with latched connector to RJ45(Male), Cat6, Length: 1000CM	• Nuvo-11000 series • Nuvo-9000 series • Nuvo-9501 series • Nuvo-9531 series • Nuvo-9531-FT • Nuvo-7000 series • Nuvo-7100VTC series • Nuvo-7200VTC series • Nuvis-7306RT series • Nuvis-534RT series • Nuvo-9160GC series • Nuvo-7160GC series • Nuvo-7501/7505D • Nuvo-7531 • POC-700 series • POC-751VTC • POC-500 series • POC-551VTC • POC-400 series • POC-40 series • RGS-8805GC • NRU-220S • NRU-120S/110V • NRU-52S+/ 52S • NRU-51V+/ 51V
	Cbl-M12X8M-RJ45-CAT6A-500CM	M12(8-pole-X-coded) to RJ45, CAT6A, Length : 500CM	• GT-92GC/ GT-92GC-H • SEMIL-1700GC series • SEMIL-1700 series • SEMIL-1300GC series • SEMIL-1300 series
	Cbl-M12X8M-RJ45-500CM	M12 (8-pole-X-coded) to RJ45, CAT6, length : 500CM	• SEMIL-2000GC/ SEMIL-2000 • Nuvo-9200VTC series • Nuvo-9100VTC series • Nuvo-7200VTC series • Nuvo-7250VTC series • Nuvo-5100VTC series • Nuvo-2610VTC series • Nuvo-2615RL series
	Cbl-M12X8M-RJ45F-100CM	M12(8-pole-X-coded) to RJ45 Female, CAT6A, Length : 100CM	• Nuvo-9650AWP • POC-465AWP
	Cbl-M12A8M-2U2TA-180CM1	M12 (8-pole-A-coded) to 2xUSB 2.0 type A (female), Length: 180CM	• SEMIL-2000GC/ SEMIL-2000 • SEMIL-1700GC series • SEMIL-1700 series • SEMIL-1300GC series • SEMIL-1300 series • Nuvo-9650AWP • POC-465AWP
	Cbl-M12A17M-VGA-180CM2	M12 (17-pole-A-coded) to VGA (Male), Length: 180CM	• SEMIL-1700GC series • SEMIL-1700 series • SEMIL-1300GC series • SEMIL-1300 series • Nuvo-9650AWP • POC-465AWP
	Cbl-M12A17M-2DB9M_OW2-180CM1	M12 (17-pole-A-coded) to 2xDB9 (Male) and 1xopen wire 2P, Length: 180CM	• SEMIL-1700GC series • SEMIL-1700 series • SEMIL-1300GC series • SEMIL-1300 series
	Cbl-M12A8M-2DB9M-180CM	M12 (8-pole-A-coded male) to 2x DB9 male, Length: 180CM	• SEMIL-2000GC/ SEMIL-2000 • Nuvo-9650AWP • POC-465AWP
	Cbl-M12A8M-ADJ-180CM	M12 (8-pole-A-coded) to Audio Jack, Length : 180CM	• SEMIL-1700GC series • SEMIL-1700 series • SEMIL-1300GC series • SEMIL-1300 series
	Cbl-M12A5F-OW3-180CM	M12(5-pole-A-coded Female) to 3P cord end terminal, Length : 180CM	• POC-465AWP
	Cbl-M12S4F-OW4-180CM1	M12 (4-pole-S-coded) to open wire 4P, Length: 180CM	• SEMIL-1700GC series • SEMIL-1700 series

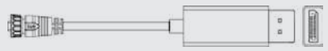
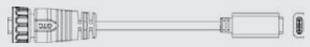
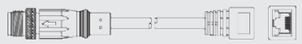
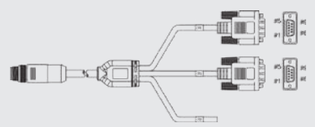
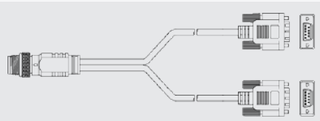
SEMIL-1000 Series

Type	Model Name	Description
	Cbl-M12X8M-RJ45-CAT6A-500CM	M12 (8-pole-X-coded) to RJ45, CAT6, length : 500CM
	Cbl-M12A8M-2U2TA-180CM	M12 (8-pole-A-coded) to 2xUSB 2.0 type A (female), Length: 180CM
	Cbl-M12A17M-VGA-180CM2	M12 (17-pole-A-coded) to VGA (Male), Length: 180CM
	Cbl-M12A8M-2DB9M_OW2-180CM1	Cable 180cm, M12 A-Code Male 8P to x2 DB9 Male+2P
	Cbl-M12S4F-OW4-180CM1	Cable 180cm, M12 S-Code Female 4P to Open Wire 4P
	Cbl-M12A8M-ADJ-180CM	M12 (8-pole-A-coded) to Audio Jack, Length : 180CM

Cable Kit

SEMIL-1300 M12 cable kit		
Cblkit-M12-SEMIL1300	4x Cbl-M12X8M-RJ45-CAT6A-500CM	1x Cbl-M12A8M-2U2TA-180CM
	1x Cbl-M12A17M-VGA-180CM2	1x Cbl-M12A17M-2DB9M_OW2-180CM1
SEMIL-1300-10G M12 cable kit		
Cblkit-M12-SEMIL1300	5x Cbl-M12X8M-RJ45-CAT6A-500CM	1x Cbl-M12A8M-2U2TA-180CM
	1x Cbl-M12A17M-VGA-180CM2	1x Cbl-M12A8M-2DB9M_OW2-180CM1
SEMIL-1704 M12 cable kit		
Cblkit-M12-SEMIL1700	4x Cbl-M12X8M-RJ45-CAT6A-500CM	1x Cbl-M12A8M-2U2TA-180CM
	1x Cbl-M12A17M-VGA-180CM2	1x Cbl-M12A8M-2DB9M_OW2-180CM1
	1x Cbl-M12S4F-OW4-180CM1	
SEMIL-1704-10G M12 cable kit		
Cblkit-M12-SEMIL1700-10G	5x Cbl-M12X8M-RJ45-CAT6A-500CM	1x Cbl-M12A8M-2U2TA-180CM
	1x Cbl-M12A17M-VGA-180CM2	1x Cbl-M12A8M-2DB9M_OW2-180CM1
	1x Cbl-M12S4F-OW4-180CM1	
SEMIL-1708 M12 cable kit		
Cblkit-M12-SEMIL1708	8x Cbl-M12X8M-RJ45-CAT6A-500CM	2x Cbl-M12A8M-2U2TA-180CM
	1x Cbl-M12A17M-VGA-180CM2	1x Cbl-M12A8M-2DB9M_OW2-180CM1
	1x Cbl-M12S4F-OW4-180CM1	
SEMIL-1708-10G M12 cable kit		
Cblkit-M12-SEMIL1708-10G	9x Cbl-M12X8M-RJ45-CAT6A-500CM	2x Cbl-M12A8M-2U2TA-180CM
	1x Cbl-M12A17M-VGA-180CM2	1x Cbl-M12A8M-2DB9M_OW2-180CM1
	1x Cbl-M12S4F-OW4-180CM1	
SEMIL-1708-ADO M12 cable kit		
Cblkit-M12-SEMIL1708-ADO	8x Cbl-M12X8M-RJ45-CAT6A-500CM	2x Cbl-M12A8M-2U2TA-180CM
	1x Cbl-M12A17M-VGA-180CM2	1x Cbl-M12A8M-2DB9M_OW2-180CM1
	1x Cbl-M12S4F-OW4-180CM1	1x Cbl-M12A8M-ADJ-180CM
SEMIL-1708-10G-ADO M12 cable kit		
Cblkit-M12-SEMIL1708-10G-ADO	9x Cbl-M12X8M-RJ45-CAT6A-500CM	2x Cbl-M12A8M-2U2TA-180CM
	1x Cbl-M12A17M-VGA-180CM2	1x Cbl-M12A8M-2DB9M_OW2-180CM1
	1x Cbl-M12S4F-OW4-180CM1	1x Cbl-M12A8M-ADJ-180CM

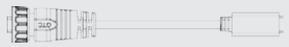
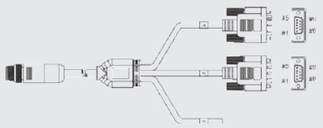
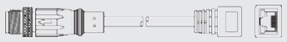
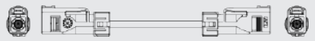
SEMIL-2000 Series

Type	Model Name	Description
	Cbl-TpCPlug-DPM-1M	TypeC Male Plug to DP Male Cable, Length : 1M
	Cbl-TpCPlug-U3TA-50CM	TypeC Male Plug to USB3.0 Type-A FML, Length: 50CM
	Cbl-TpCPlug-UTpCF-50CM	TypeC Male Plug to USB Type-C FML Cable, Length : 50CM
	Cbl-M12X8M-RJ45-500CM	M12(8-pole-X-coded) to RJ45, CAT6, Length : 500CM
	Cbl-M12A8M-2U2TA-180CM1	M12 (8-pole-A-coded) to 2xUSB 2.0 type A (female), Length: 180CM
	Cbl-M12A8M-2DB9M_OW2-180CM1	M12 A-Code Male 8P to x2 DB9 Male+2P, Length: 180CM
	Cbl-M12A8M-2DB9M-180CM	M12 (8-pole-A-coded male) to 2x DB9 male, Length: 180CM
	Cbl-M12L5F-CordEnd5-180CM	M12 L-Code 5P(FML) to Cord End Terminal 5P, Length: 1.8M

Cable Kit

SEMIL-2000 M12 cable kit		
Cblkit-M12-SEMIL2000	7x Cbl-M12X8M-RJ45-500CM	1x Cbl-M12A8M-2U2TA-180CM1
	2x Cbl-M12A8M-2DB9M_OW2-180CM1 (COM1/2 & CAN1/2)	1x Cbl-M12A8M-2DB9M-180CM (COM3/4)
	1x Cbl-M12L5F-CordEnd5-180CM	

NRU-230V-AWP/NRU-240S- AWP

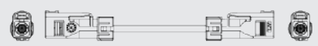
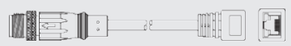
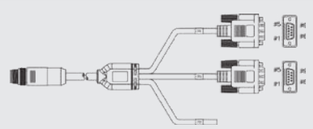
Type	Model Name	Description
	Cbl-TpCPlug-UTpCF-50CM	Waterproof TypeC Male Plug to USB Type-C FML Cable, Length: 50cm
	Cbl-M12A8M-2U2TA-180CM1	Waterproof M12 (8-pole-A-coded) to 2x USB 2.0 type A (female), Length: 180CM
	Cbl-M12A8M-2DB9M_OW2-180CM1	Cable 180cm, Waterproof M12 A-Code Male 8P to x2 DB9 Male+2P
	Cbl-M12X8M-RJ45F-100CM	Waterproof M12 (8-pole-X-coded) to RJ45 Female, CAT6A, Length: 100CM
	Cbl-FAKRA-ZFM-ZFM-12M	Waterproof FAKRA Z-code Female to Waterproof FAKRA Z-code Female, Length: 12M
	FK-FF-CABLE-7M	FAKRA SMB ST. Female Z code to FAKRA SMB ST. Female A code, Length: 700CM

Cable Kit

NRU-230V-AWP or NRU-240S-AWP front panel cable kit		
Cblkit-FP-NRU-230V-AWP_NRU-240S-AWP	1x Cbl-TpCPlug-UTpCF-50CM	1x Cbl-M12A8M-2U2TA-180CM1
	3x Cbl-M12A8M-2DB9M_OW2-180CM1	5x Cbl-M12X8M-RJ45F-100CM

NRU-230V-AWP back panel cable kit		
Cblkit-BP-NRU-230V-AWP	8x Cbl-FAKRA-ZFM-ZFM-12M	

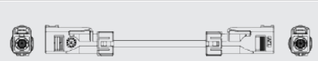
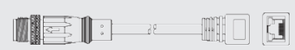
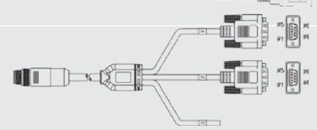
NRU-170-PPC Series

Type	Model Name	Description
	Cbl-FAKRA-ZFM-ZFM-12M	Waterproof FAKRA Z-code Female to Waterproof FAKRA Z-code Female, Length: 12M
	Cbl-M12X8M-RJ45F-100CM	Waterproof M12 (8-pole-X-coded) to RJ45 Female, CAT6A, Length: 100CM
	Cbl-M12A8M-2U2TA-180CM1	Waterproof M12 (8-pole-A-coded) to 2x USB 2.0 type A (female), Length: 180CM
	Cbl-M12A8M-2DB9M_OW2-180CM1	M12 A-Code Male 8P to x2 DB9 Male+2P, Length: 180CM

Cable Kit

NRU-170-PPC Series cable kit		
Cblkit-NRU-171V-PPC	6xCbl-FAKRA-ZFM-ZFM-12M	1xCbl-M12X8M-RJ45F-100CM
	1xCbl-M12A8M-2U2TA-180CM1	1xCbl-M12A8M-2DB9M_OW2-180CM1
Cblkit-NRU-172S-PPC	5xCbl-M12X8M-RJ45F-100CM	1xCbl-M12A8M-2U2TA-180CM1
	1xCbl-M12A8M-2DB9M_OW2-180CM1	

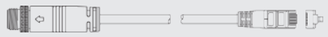
NRU-160-AWP Series

Type	Model Name	Description
	Cbl-FAKRA-ZFM-ZFM-12M	Waterproof FAKRA Z-code Female to Waterproof FAKRA Z-code Female, Length: 12M
	Cbl-M12X8M-RJ45F-100CM	Waterproof M12 (8-pole-X-coded) to RJ45 Female, CAT6A, Length: 100CM
	Cbl-M12A8M-2U2TA-180CM1	Waterproof M12 (8-pole-A-coded) to 2x USB 2.0 type A (female), Length: 180CM
	Cbl-M12A8M-2DB9M_OW2-180CM1	M12 A-Code Male 8P to x2 DB9 Male+2P, Length: 180CM
	Cbl-M12A17M-VGA-180CM2	M12 (17-pole-A-coded-S) to VGA (male), Length : 180CM

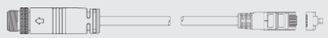
Cable Kit

NRU-160-AWP Series cable kit		
Cblkit-NRU-161V-AWP	6xCbl-FAKRA-ZFM-ZFM-12M	1xCbl-M12X8M-RJ45F-100CM
	1xCbl-M12A8M-2U2TA-180CM1	1xCbl-M12A8M-2DB9M_OW2-180CM1
	1xCbl-M12A17M-VGA-180CM2	
Cblkit-NRU-162S-AWP	5xCbl-M12X8M-RJ45F-100CM	1xCbl-M12A8M-2U2TA-180CM1
	1xCbl-M12A8M-2DB9M_OW2-180CM1	1xCbl-M12A17M-VGA-180CM2

GT-92GC

Type	Model Name	Description
	Cbl-M12L5F-CordEnd5-180CM	M12 L-Code 5P(FML) to Cord End Terminal 5P, Length: 180cm
	Cbl-M12X8M-RJ45-CAT6A-500CM	M12(8-pole-X-coded) to RJ45, CAT6A, Length: 500CM
	Cbl-DB9F-2DB9M-15CM	DB9 (Female) to 2x DB9 (Male), Length: 15CM for CAN1/2
	AccsyBx-SplicingConnector	Accessory box kits for Splicing Connector 2-Pole, included 10pcs

GT-92RL-H

Type	Model Name	Description
	Cbl-M12K5F-CordEnd4-180CM	M12 K-Code Female 5P to Cord End Terminal 4P, Lenght:180cm
	Cbl-M12X8M-RJ45-CAT6A-500CM	M12(8-pole-X-coded) to RJ45, CAT6A, Length: 500CM
	Cbl-DB9F-2DB9M-15CM	DB9 (Female) to 2x DB9 (Male), Length: 15CM for CAN1/2
	AccsyBx-SplicingConnector	Accessory box kits for Splicing Connector 2-Pole, included 10pcs

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