Nuvo-9531 Series

Intel® 12th -Gen Core™ i9/ i7/ i5/ i3 Compact Fanless Computer 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® 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® 12th -Gen Alder Lake 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® 12th-Gen processors have up to 16 cores/ 24 threads to deliver up to 1.8x 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 M.2 Gen4x4 slot for the latest NVMe SSDs that support 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.
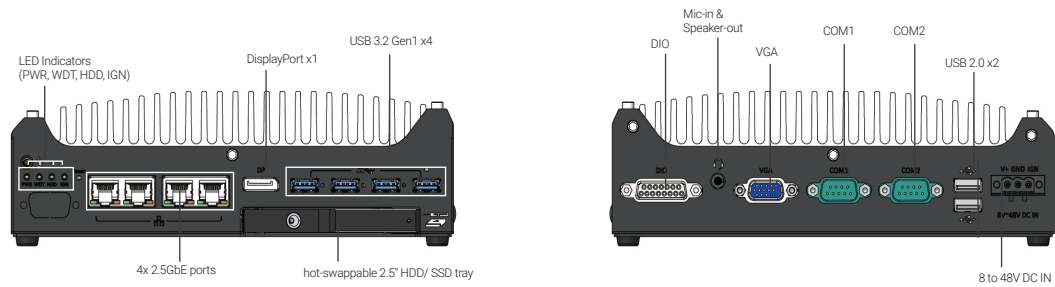
Specifications

System Core

Processor	Support Intel® 12th-Gen Alder Lake 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® H610E platform controller hub
Graphics	Integrated Intel® UHD Graphics 770 (32EU)
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 4x2.5GbE 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 to 48V DC input with optional ignition power control

Mechanical

Dimension	212mm (W) x 165 mm (D) x 63 mm (H)
Weight	2.5 kg
Mounting	Wall-mount (standard) or DIN-rail mount (optional)

Environmental

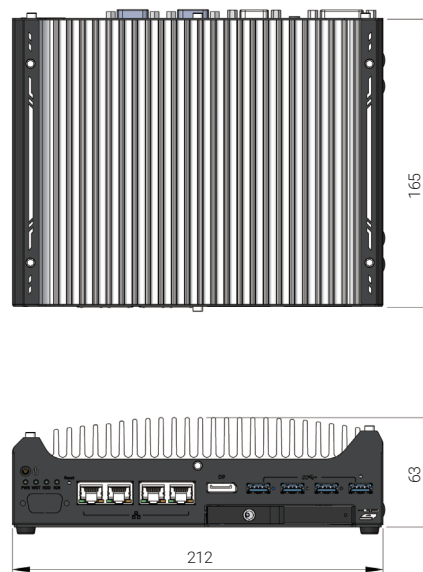|	
Operating Temperature	**with 35W CPU** -25°C ~ 60°C * **with 65W CPU** (installation of the optional fan kit is recommended) -25°C ~ 60°C */**
Storage Temperature	-40°C ~ 85°C
Humidity	10%~90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

* For 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.

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Rev022323

Last updated: 8 - Dec 2022

Appearance

LED Indicators
(PWR, WDT, HDD, IGN)
DisplayPort x1
USB 3.2 Gen1 x4
4x 2.5GbE ports
hot-swappable 2.5" HDD/ SSD tray

Mic-in &
Speaker-out
DIO
VGA
COM1
COM2
USB 2.0 x2
8 to 48V DC IN

Dimensions

Unit : mm

165

63

212

Ordering Information

Model No.	Product Description
Nuvo-9531	Intel® 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
Fan kit	Fan kit with 92mm x 92mm fan for Nuvo-9531 series