NEOUSYS TECHNOLOGY

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 128GB 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

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Introduction

Nuvo-9650AWP is a cost-effective IP66 waterproof computer with Intel® 14th/13th/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.
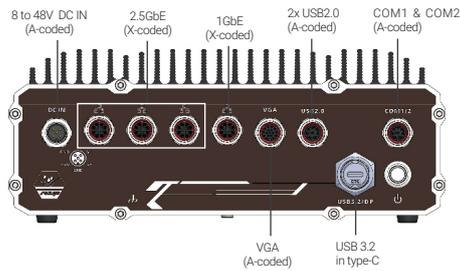
The integration of IP66 waterproof capability with embedded computer eliminates environmental limitations where exposure to dust or liquids may be of concern. Its affordable waterproof design further reduces the gap in TCO for budget-conscious projects which is defining a new category of embedded computer that strikes a sweetspot between ruggedness performance and cost.
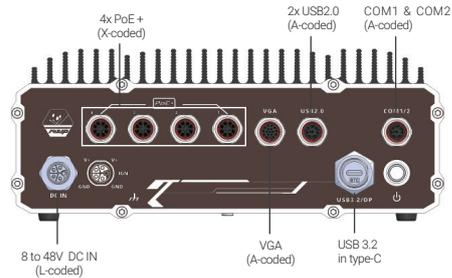
Specifications

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 128 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 ~ 70°C* with 65W CPU -25°C ~ 70°C* (configured as 35W TDP mode) -25°C ~ 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.
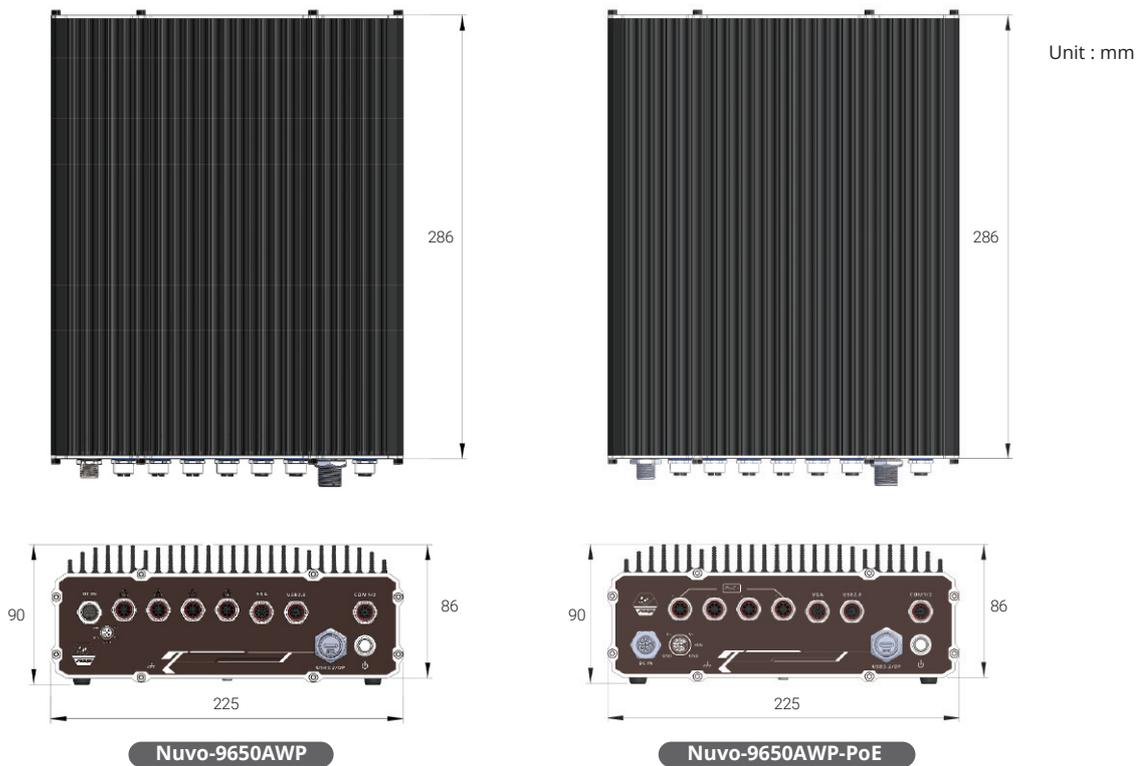
Appearance

Nuvo-9650AWP

- 8 to 48V DC IN (A-coded)
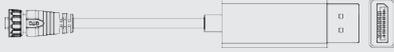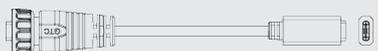- 2.5GbE (X-coded)
- 1GbE (X-coded)
- 2x USB2.0 (A-coded)
- COM1 & COM2 (A-coded)
- VGA (A-coded)
- USB 3.2 in type-C

Nuvo-9650AWP-PoE

- 4x PoE + (X-coded)
- 2x USB2.0 (A-coded)
- COM1 & COM2 (A-coded)
- 8 to 48V DC IN (L-coded)
- VGA (A-coded)
- USB 3.2 in type-C

Dimensions

Unit : mm

Nuvo-9650AWP — 286 / 90 / 86 / 225

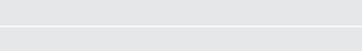**Nuvo-9650AWP-PoE** — 286 / 90 / 86 / 225

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, 85~264VAC, -30~+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-CordEnd5-180CM
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-9650AWP 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-RJ45F-100CM	M12 (8-pole-X-coded) to RJ45, CAT6A, Length: 100CM
	Cbl-M12A8M-2U2TA-180CM1	M12 (8-pole-A-coded) to 2xUSB 2.0 type A (female), Length: 180CM
	Cbl-M12A8M-2DB9M-180CM	M12 (8-pole-A-coded male) to 2x D89 male, Length: 180CM
	Cbl-M12A17M-VGA-180CM3	M12 (17-pole-A-coded-S) to VGA (male), Length: 180CM
	Cbl-M12A5F-OW3-180CM1	M12 (5-pole-A-code Female) to 3P cord end terminal, Length: 180CM
	Cbl-M12L5F-CordEnd5-180CM	M12 L-Code 5P(FML) to Cord End Terminal SP, Length: 1.8M

Cable Kit

Nuvo-9650AWP M12 cable kit		
Cblkit-M12-Nuvo-9650AWP	4x Cbl-M12X8M-RJ45F-100CM 1x Cbl-M12A8M-2U2TA-180CM1 1x Cbl-M12A8M-2DB9M-180CM	1x Cbl-M12A17M-VGA-180CM3 1x Cbl-M12A5F-OW3-180CM1
Nuvo-9650AWP-PoE M12 cable kit		
Cblkit-M12-Nuvo-9650AWP-PoE	4x Cbl-M12X8M-RJ45F-100CM 1x Cbl-M12A8M-2U2TA-180CM1 1x Cbl-M12A8M-2DB9M-180CM	1x Cbl-M12A17M-VGA-180CM3 1x Cbl-M12L5F-CordEnd5-180CM