BCO-1000-ADLN SERIES

INDUSTRIAL FANLESS
COMPUTER

REAL-TIME DATA
PROCESSING FOR RUGGED
EDGE COMPUTING

COMPACT INDUSTRIAL COMPUTER

The BCO Series are designed and built to withstand deployment in challenging environments, managing workloads at the rugged edge for processing, storage, connectivity, and machine learning. This series is capable of accommodating various edge workloads, ranging from power-efficient computing to robust processing capabilities.

Deployment
Ready Solution

High-Performance
Efficiency

Fast Time To
Market

Compact &
Ruggedized Design

Industrial Fanless Mini Computer

Revolutionizing Industrial Edge IoT with BCO-1000-ADLN Series

The BCO-1000-ADLN series, powered by the 12th Gen Intel® Core processor (Alder Lake-N97), strikes a balance between powerful performance and energy efficiency, making it ideal for industrial edge IoT applications. Its compact design, paired with the high-performance capabilities of the Alder Lake-N97 processor, ensures unmatched performance and reliability, catering to the diverse requirements of industrial environments. With advanced features and a robust construction, this cutting-edge fanless mini computer seamlessly integrates into industrial setups, redefining the standards of industrial computing.

Utilizing its advanced architecture, the BCO-1000-ADLN delivers faster performance, ensuring smoother operation, accelerated data processing, and overall enhanced efficiency. This powerful CPU performance positions it as an optimal choice for demanding industrial edge IoT applications, seamlessly providing cost-effective and deployment-ready solutions where reliability, speed, and integration are paramount.

▼ BCO-1000-ADLN Key Features

- Intel 12th Gen ADL CPU
- Dual Display (4K)
- Industrial-Grade Fanless Design
- DDR5 Memory
- Wide Temperature Range
- World-class certifications: CE, FCC, UL (Pending)

Industrial Automation

Autonomous Robotics

Network Gateways

Kiosks and Retail

Remote Monitoring

Smart Cities

Leveraging 12th Gen Intel Alder Lake for Industrial Edge IoT

The BCO-1000-ADLN Series is powered by the 12th Gen Intel® Alder Lake-N processor N97, a 12W powerhouse engineered for embedded computing in industrial settings. This processor optimizes energy consumption while delivering exceptional performance. Its System-on-Chip (SoC) integration consolidates multiple essential components onto a single chip, enhancing efficiency and simplifying system design for compact and fanless mini PCs. Moreover, with industrial-grade durability, the Alder Lake-N97 processor ensures reliable operation in harsh environments, minimizing downtime and maintenance costs for uninterrupted productivity.

▶ Efficiency Meets Performance

The Alder Lake-N97 processor exclusively features Efficiency (E) cores based on the Gracemont microarchitecture.
This unique design allows the BCO-1000-ADLN series to optimize power efficiency and computing power, dynamically adjusting to workload demands without sacrificing performance. This capability is particularly beneficial in fanless systems where energy efficiency is crucial for maintaining low operational temperatures.

▶ High-Speed DDR5 Memory

The BCO-1000-ADLN series features DDR5 system memory, providing exceptional performance and responsiveness with a maximum capacity of 16 GB. The default configuration includes 8 GB of memory, validated by Premio for quick deployment-ready solutions, ensuring seamless multitasking, faster data processing, and smoother system operation.
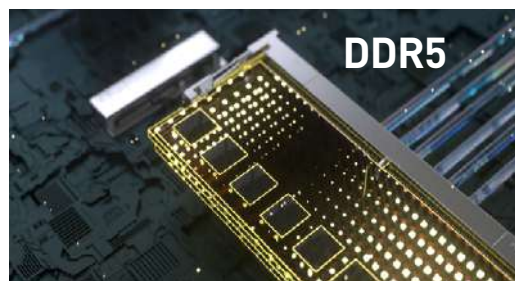
▶ Flexible Network Configuration

The BCO-1000-ADLN series provides adaptable networking solutions with two distinct configurations: one featuring 2x LAN ports, and the other boasting 3x LAN ports. These options cater to a spectrum of industrial needs, from standard networking tasks to more demanding applications requiring increased bandwidth and redundancy.

	BCO-1000-ADLN	BCO-1000-ADLN-B
LAN Ports	2x RJ45 2.5 GbE	3x RJ45 2.5 GbE
onnectivity	Wi-Fi 6E & BT-5.1	Wi-Fi 6E & BT-5.1 1x SIM Socket for 4G/LTE
USB Ports	4x USB 3.2 2x USB 2.0	2x USB 3.2 2x USB 2.0

▶ Scalable Storage Expansions

M.2 B Key

The BCO-1000-ADLN provides flexible storage expansions tailored to diverse requirements. Its M.2 B Key slot supports high-speed PCIe SSDs and comes pre-installed with a 128GB SSD, while the SATA 2.5" Drive Bay offers additional storage expansion options. This versatility ensures seamless integration and optimal performance in industrial computing

▶ Robust Cellular & Wireless Connectivity

Both series optimize its M.2 slots to provide robust cellular and wireless connectivity options. While the BCO-1000-ADLN utilizes its M.2 E Key slot for Wi-Fi and Bluetooth modules, offering Intel® AX210 Wi-Fi 6E & BT-5.1 for high-speed wireless connectivity, the BCO-1000-ADLN-B series employs its M.2 B Key slot for a dual SIM socket supporting 4G and LTE connectivity.
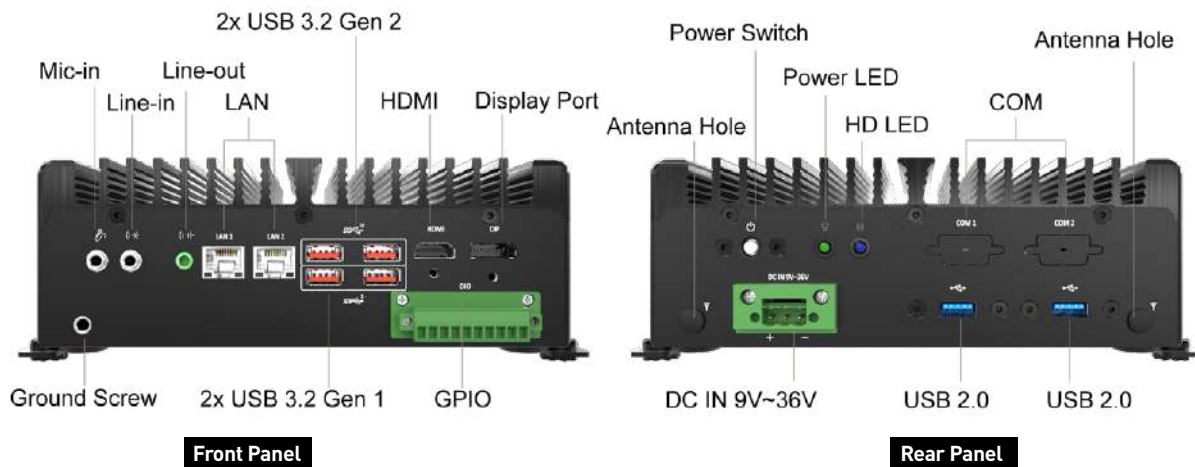
► Balanced I/O Configurations

Dual 4K Independent Displays

The BCO-1000-ADLN series provides dual display support with 1x HDMI and 1x DisplayPort connections, both offering 4K resolutions (3840 x 2160 @30Hz and 4096 x 2304 @60Hz) respectively. These high-definition options ensure crisp visuals and smooth performance for various industrial and commercial applications.

Up to 4x USB 3.2

The BCO-1000-ADLN series offers extensive up to 4x USB 3.2 connectivity, supporting up to 4x USB 3.2 ports for seamless data transfer and efficient peripheral device usage. With 2x USB 3.2 Gen2 ports and 2x USB 3.2 Gen1 ports, users can experience fast data transfer rates, enhancing productivity and versatility in industrial and commercial environments. Additionally, for applications requiring fewer USB ports, the BCO-1000-ADLN-B series provides support for 2x USB 3.2 Gen1 ports.

Front Panel

Mic-in, Line-in, Line-out, LAN, 2x USB 3.2 Gen 2, HDMI, Display Port, Ground Screw, 2x USB 3.2 Gen 1, GPIO

Rear Panel

Power Switch, Power LED, Antenna Hole, HD LED, COM, Antenna Hole, DC IN 9V~36V, USB 2.0, USB 2.0

Dual COM Ports

The BCO-1000-ADLN features dual DB9 connectors, offering robust serial communication capabilities. COM1 supports RS232, RS422, and RS485 protocols, providing versatile connectivity for a wide range of industrial devices. Additionally, COM2 is dedicated to RS232 communication, ensuring compatibility with legacy equipment.

8-bit GPIO

Equipped with 1x 8 GPIO (General Purpose Input/Output), the BCO-1000-ADLN provides versatile connectivity options for industrial applications. These GPIO pins enable the system to interface with external devices, sensors, and control systems, allowing for seamless integration and communication within industrial environments.

▶ Discrete Hardware Security with TPM 2.0

The integration of TPM 2.0 (Trusted Platform Module) in the BCO-1000-ADLN ensures heightened security and data integrity for edge IIoT environments. By facilitating secure boot processes, data encryption, device authentication, and remote attestation, TPM 2.0 effectively safeguards against unauthorized access, data breaches, and malware attacks, enhancing the trustworthiness and reliability of the BCO-1000-ADLN in industrial settings.

| **Compact** 192 x 140 x68 mm	**Fanless** Passive Cooling	**Wide Voltage Inputs** 9~36VDC
0°C to 50°C Operating Temp	**50G | 5Grms** Shock & Vibration Resistance	**Flexible** Wall Mount / Din-Rail

▶ Small Form Factor

The BCO-1000-ADLN stands out as an ultra-compact solution tailored for edge IIoT applications. With dimensions measuring just 192mm x 140mm x 68mm, its compact form factor makes it ideal for deployment in space-constrained industrial environments. This small fanless computer allows for seamless integration into edge computing setups where space optimization is essential. Despite its compact size, the BCO-1000-ADLN delivers robust performance and reliability, ensuring uninterrupted operation of critical industrial processes in diverse IIoT applications.

140 (mm)

68 (mm)

192 (mm)

▶ Flexible Mounting

With flexible mounting options such as wall mounting and optional DIN-rail mounting, the BCO-1000-ADLN adapts effortlessly to diverse industrial environments. This versatility facilitates easy installation, accommodating specific space constraints and installation preferences. Whether mounted on a wall or a DIN-rail, this compact mini computer ensures secure placement and dependable operation, making it an ideal choice for various industrial applications.

DIN-rail
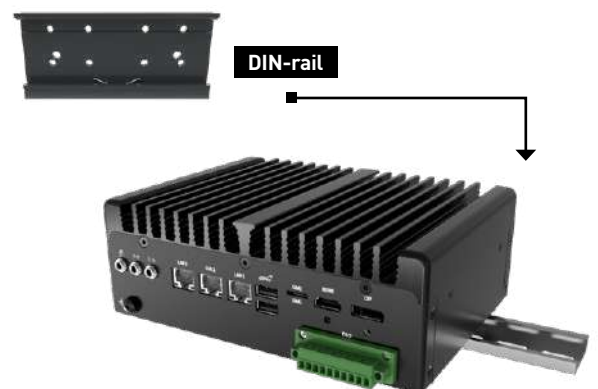
▶ Wide Voltage Input

Whether deployed in factories, warehouses, or outdoor installations, the BCO-1000-ADLN series can reliably withstand fluctuations in power supply, ensuring uninterrupted operation and enhanced reliability for critical industrial applications. It is equipped with a wide voltage input range of 9-36VDC, ensuring compatibility with various power sources commonly found in industrial settings.

▶ Industrial-Grade Durability

The BCO-1000-ADLN is engineered for industrial-grade durability, boasting robust specifications to thrive in harsh operating conditions. With a wide operating temperature range of 0°C to 50°C, it maintains reliable performance even in environments with fluctuating temperatures. Additionally, its shock resistance of up to 50G and vibration resistance of up to 5Grms, in compliance with MIL-STD-810G, ensure resilience against physical stressors commonly encountered in industrial settings.

IEC60068-2-27:2008

With SSD: 50G half-sin 11ms Designed to comply with MIL-STD-810G Method 514.7 Procedure

IEC60068-2-64:2008

With SSD: 5 Grms (5 - 500 Hz, 0.5 hr/axis) Designed to comply with MIL-STD-810G Method 514.7

▶ World-Class Certification

Supported by essential certifications, including CE, FCC and RoHS 3.0, the BCO-1000-ADLN series ensures compliance with electromagnetic compatibility regulations and environmental standards. These certifications support the BCO-1000-ADLN series' reliability and safety in industrial deployments worldwide.

- CE
- FCC Class A (47 CFR part 15.109 and part 15.107)
- RoHS 3.0 (Directive 2015/863/EU)15.109 and part 15.107)
- UL (Pending)

WE DESIGN, MANUFACTURE, AND SERVICE CUSTOMERS AROUND THE WORLD

CALIFORNIA(HQ)

ILLINOIS

GERMANY

TAIWAN

MALAYSIA

BCO-1000-ADLN SERIES

intel.
Alder Lake

Model	BCO-1000-ADLN	BCO-1000-ADLN-B
CPU Support	Support 12th Gen Intel® IoTG Alder Lake-N Processor N97, QC, 12W	
Memory	DDR5 SODIMM. Max. up to 16GB (Default: 8GB)	
Graphic Output	Dual Independent Display by 1x Display Port, 1x HDMI	
I/O	2x Intel® I225-V 2.5GbE LAN, 2x COM, 2x USB 3.2 Gen2, 2x USB 3.2 Gen1, 2x USB 2.0	2x Intel® I225-V 2.5GbE LAN, 1x Intel® I225-V 2.5GbE LAN (Co-lay I226-LM Support TSN, not verified in NPI) 2x COM, 2x USB 3.2 Gen1, 2x USB 2.0
Storage	1x Internal 2.5" SATA SSD Bay 1x M.2 (B Key 2242/2280/3042) (Default: 128GB)	
Expansion	**1x M.2 E-Key (2230)** Support PCIe x1 & USB 2.0; Support CNVi Devices Supported: Intel® AX210 Wi-Fi 6E & BT-5.1 (vPro Supported)	**1x M.2 E-Key (2230)** Support PCIe x1 & USB 2.0; Support CNVi Devices Supported: Intel® AX210 Wi-Fi 6E & BT-5.1 (vPro Supported) **Optional Through M.2 B-Key:** Support B+M Key PCIe x1 Module for 4G/LTE 1x Dual SIM Socket (SIM1/SIM2 on the M.2 B Key slot)
Power	9 to 36VDC Wide Range Power Input Supporting AT/ATX Mode	
Certification	CE, FCC Class A, UL (Pending)	
Operating Temperature	0 °C to 50 °C	
Dimensions (WxDxH)	192 x 140 x 68 mm	