BCO-500-TWL Series

SEMI-RUGGED FANLESS MINI COMPUTER

Cost-Effective Computing for Industrial Edge IoT

COMPACT. CONNECTED. BUILT READY.



Compact Industrial Edge Computer

The BCO-500-TWL is an ultra-compact, fanless industrial edge computer engineered for demanding OEM and system integration deployments.
Built for rugged environments, it delivers high-performance processing, flexible I/O expansion, and long-term industrial reliability — ideal for edge computing, machine vision, and automation applications.

- Efficient Edge Processing
- Flexible Industrial Connectivity
- Compact & Fanless Design
- Semi-Rugged Reliability

Product Brief
Semi-Rugged Fanless Mini Computer
BCO-500TWL



Connecting Industrial Devices with Cost-Effective Edge Computing



The BCO-500-TWL is a semi-rugged fanless mini computer designed for efficient industrial edge computing. Combining a compact design, flexible connectivity, and semi-rugged reliability, it supports applications such as machine monitoring, industrial IoT gateways, and smart infrastructure.

Built for space-constrained environments, it provides a practical computing solution for OEMs and system integrators seeking reliable performance and seamless integration with industrial equipment.

Key Features

- Intel® N-Series Processors
- DDR5 4800 MT/s, up to 16GB
- Dual 2.5GbE LAN & Rich Industrial I/O
- USB 3.2 Type-C & 3× USB 3.2 Type-A
- Flexible I/O Expansion: 2× COM or 2× USB 2.0
- Triple M.2 Expansion & Dual SIM
- Dual Independent 4K Displays
- Industrial-Grade Fanless Design
- 9–36V DC Wide-Range Power Input
- Semi-Rugged Reliability (50G / 5Grms)



Warehouse Logistics

Industrial Automation

Smart Infrastructure

Industrial IoT Gateways

Self-Service Kiosks



Efficient Intel® N-Series Processing for Industrial Edge IoT

The BCO-500-TWL Series supports Intel® N-Series and Atom® processors, combining energy-efficient computing with a compact fanless design.
Featuring the Intel® Processor N97 as the standard configuration, the BCO-500-TWL delivers quad-core processing for industrial monitoring, machine connectivity, data acquisition, and lightweight edge applications. Project-based Intel® Processor N150 and Intel® Atom® x7433RE options provide additional processor choices for different deployment requirements.



Efficient Processing for Edge Applications

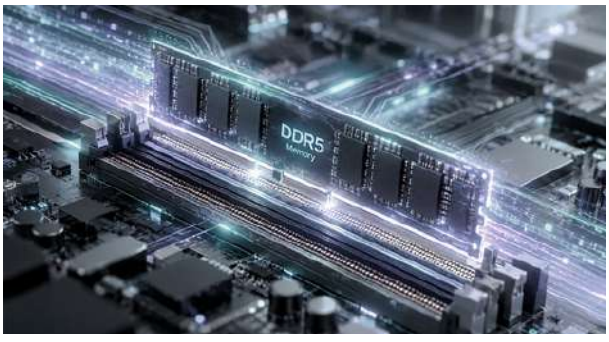
The Intel® Processor N97 features four cores with speeds up to 3.60 GHz, delivering responsive performance and efficient multitasking for industrial edge applications.
Its integrated SoC architecture supports power-efficient, fanless computing, while project-based processor options provide flexibility for different application requirements.

Processor	Cores	Maximum Frequency	Configuration
Intel® Processor N97	4	3.60 GHz	Standard
Intel® Processor N150	4	3.60 GHz	Project-Based
Intel® Atom® x7433RE	4	3.40 GHz	Project-Based

High-Speed DDR5 Memory

The BCO-500-TWL supports DDR5 4800 MT/s memory, delivering high bandwidth for responsive multitasking and industrial data processing.

- 1× 262-pin DDR5 SO-DIMM
- Up to 16GB non-ECC memory

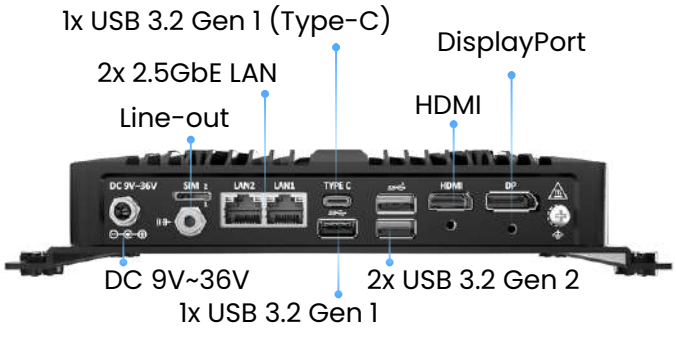




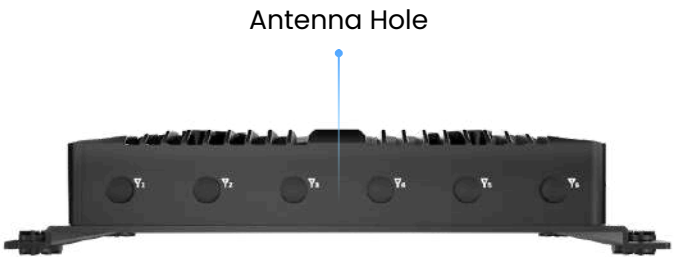
Rich High-Speed Industrial I/O

The BCO-500-TWL integrates versatile industrial interfaces into its compact chassis, supporting communication with connected machines, sensors, displays, and networking equipment.

Its flexible I/O configurations enable integration across industrial IoT and embedded equipment applications.



Front Panel



Rear Panel

Dual 2.5GbE LAN Connectivity

Equipped with two Intel® I226-V 2.5GbE LAN controllers, the BCO-500-TWL supports high-speed wired communication for connected industrial equipment.
The two Ethernet interfaces can be configured for separate network connections, allowing the computer to communicate with machine-level devices and upstream facility networks.
This connectivity is useful for industrial gateways, equipment monitoring, and connected automation systems.

Dual 4K Independent Displays

The BCO-500-TWL supports two independent displays through DisplayPort 1.4 and HDMI 2.1 connections.



Both interfaces support resolutions up to 3840 x 2160 at 60Hz, enabling high-resolution visualization for operator interfaces, monitoring dashboards, and connected workstations.

High-Speed USB Connectivity

The BCO-500-TWL provides four USB 3.2 interfaces for connecting industrial peripherals, storage devices, and other supported USB equipment.

- 2x USB 3.2 Gen 2 Type-A
- 1x USB 3.2 Gen 1 Type-A
- 1x USB 3.2 Gen 1 Type-C

The combination of Type-A and Type-C interfaces provides flexibility for peripheral integration within industrial equipment.

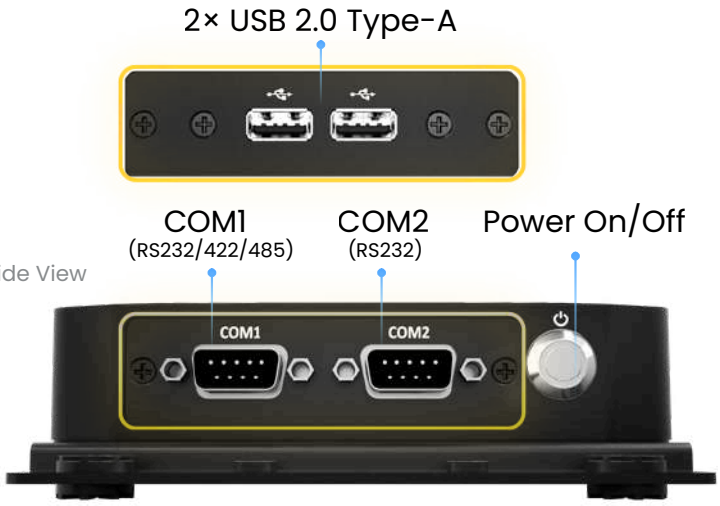


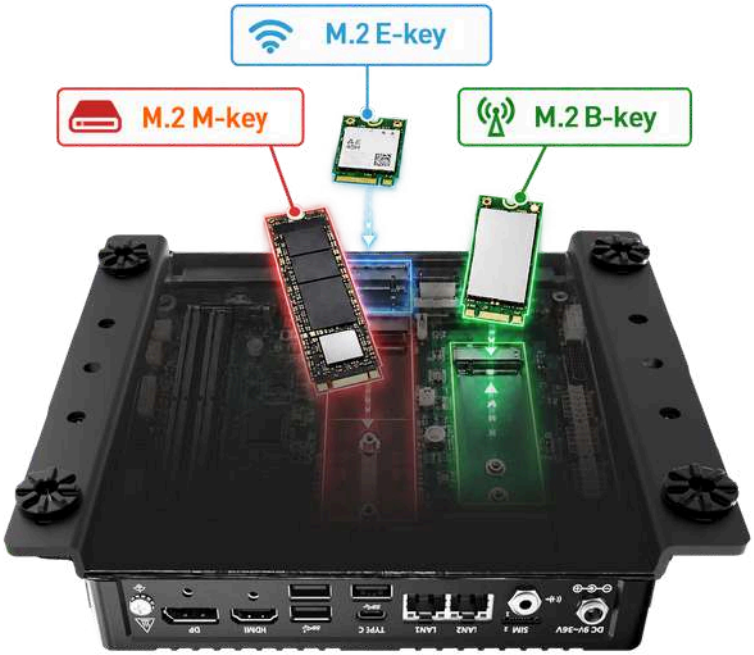
Configurable Side I/O — COM or USB

The BCO-500-TWL offers configurable side I/O to support different industrial peripherals, with two interchangeable options:

- COM: 1× RS-232/422/485 + 1× RS-232
- USB: 2× USB 2.0 Type-A (optional)

This flexibility enables connectivity with legacy industrial equipment or additional USB peripherals, depending on application requirements.





Note: The M.2 B-Key shares an interface with the SATA connector. B-Key cellular expansion and SATA storage are alternative configurations.

Triple M.2 Expansion for Storage and Wireless Connectivity

The BCO-500-TWL features three M.2 slots for NVMe storage, wireless networking, and cellular communication.

The M-Key slot supports high-speed NVMe storage, the B-Key supports optional 4G LTE/5G cellular expansion, and the E-Key enables Wi-Fi connectivity.

Together with dual Nano-SIM sockets and six antenna openings, these options provide flexible connectivity for industrial IoT applications.

M.2 Expansion

- M-Key 2280: 128GB NVMe SSD (Default)
- B-Key 2242/3042/3052: Optional 4G LTE/5G expansion
- E-Key 2230: Optional Wi-Fi 6E expansion
- Dual Nano-SIM: Cellular connectivity



Compact Form Factor

The BCO-500-TWL features a slim, fanless aluminum chassis measuring 225 × 130 × 41 mm and weighing just 1.2 kg.
Its compact design enables easy integration into equipment cabinets, machine enclosures, and space-constrained industrial installations.



Flexible Mounting Options

The BCO-500-TWL supports multiple mounting configurations to accommodate different industrial installation requirements.

Wall and VESA mounting allow integration into equipment enclosures or behind compatible displays, while optional DIN-rail mounting supports installation within industrial control cabinets.



- Wall Mount



- VESA Mount



- DIN-Rail Mount (Optional)

Hardware Security with TPM 2.0

The BCO-500-TWL supports TPM 2.0 for hardware-based security, including cryptographic key protection, device authentication, and data encryption with compatible software.

A programmable watchdog timer enables automatic system resets to support reliable industrial operation.

- TPM 2.0
- Programmable Watchdog: 1–255 seconds
- AMI UEFI BIOS





Wide-Range DC Power Input



The BCO-500-TWL supports a 9–36V DC wide-range power input, enabling integration with common industrial DC power systems. To support deployment in industrial environments, the computer incorporates multiple electrical protection features designed to protect the system from specified power abnormalities.

Integrated Power Protection

- Overvoltage Protection (OVP): Protects against excessive input voltage
- Overcurrent Protection (OCP): Protects against excessive current
- DC Surge Protection: Provides protection against transient DC surges
- Reverse Protection: Protects against reversed input polarity

Semi-Rugged Fanless Reliability

The BCO-500-TWL features a fanless aluminum chassis designed for semi-rugged industrial environments. Its passive cooling design and resistance to temperature, shock, and vibration help support reliable operation in industrial applications.





- Fanless aluminum chassis
- Operating Temperature: -10°C to 50°C
- Storage Temperature: -20°C to 70°C
- Shock Resistance: 50G
- Vibration Resistance: 5Grms
- Relative Humidity: 10–95% (non-condensing)

Industrial Certifications

The BCO-500-TWL lists major industrial safety and electromagnetic compatibility certifications to support deployment across different markets and applications.

- CE
- FCC Class B
- UL61010
- UKCA
- ICES

UL CERTIFIED SAFETY US·CA E357184

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BCO-500-TWL Series Semi-Rugged Fanless Mini Computer



Model	BCO-500-TWL
CPU	• Intel® Processor N97 (Standard) • Intel® Processor N150 (Project-Based) • Intel® Atom® x7433RE (Project-Based)
Memory	DDR5 4800 MT/s, up to 16GB
Display	1x HDMI 2.1, 4K @ 60Hz , 1x DP 1.4, 4K @ 60Hz
Storage	1x M.2 M-Key 2280 (NVMe SSD)
Expansion	1x M.2 B-Key (LTE4G/5G), 1x M.2 E-Key (Wi-Fi) Dual Nano-SIM
I/O	2x 2.5GbE LAN 2x USB 3.2 Gen 2 Type-A, 1x USB 3.2 Gen 1 Type-A 1x USB 3.2 Gen 1 Type-C **Configurable Side I/O (Choose One)：** **COM :** 1x RS-232/422/485 + 1x RS-232, **USB :** 2x USB 2.0 Type-A (Optional)
Power	9–36V DC, AT/ATX, OVP/OCP/Surge/Reverse Protection
Certification	CE, FCC Class B, UL61010, UKCA, ICES
Operating Temperature	-10°C to 50°C
Dimensions	225 mm (W) × 130 mm (D) × 41 mm (H)
Shock & Vibration	50G Shock & 5Grms Vibration Designed to comply with MIL-STD-810H

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