FANLESS MINI COMPUTER

# BCO-500-TWL

## Semi-Rugged Fanless Mini Computer with Intel® N-Series Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN



### Features

- Supports Intel® N-Series Processors
- 1x 262-pin DDR5 4800 MT/s SO-DIMM. Max. 16GB (Non-ECC)
- Dual Independent Display by 1x DisplayPort, 1x HDMI
- 2x Intel® I226-V 2.5GbE LAN
- 1x M.2 M-Key for NVMe SSD, 1x M.2 B-Key for 4G LTE/5G, 1x M.2 E-Key for Wi-Fi/Bluetooth
- 2x COM, 3x USB-A, 1x USB-C, 1x Dual Nano SIM Socket
- 9 to 36VDC wide-range power input supporting AT/ATX mode
- Wide operating temperature: 0°C to 50°C
- TPM 2.0 supported
- CE, FCC Class B, UL 61010, UKCA, ICES

### Specifications

| System | |
|---|---|
| Processor | |
| Standard<br>• Intel® N97 Processor, 6MB Cache, up to 3.60 GHz, 4-Core Processor | |
| Project Based<br>• Intel® N150 Processor, 6MB Cache, up to 3.60 GHz, 4-Core Processor<br>• Intel® Atom® x7433RE Processor, 6MB Cache, up to 3.40 GHz, 4-Core Processor | |
| System Chipset | SoC integrated |
| LAN Chipset | GbE1: Intel® i226V 2.5GbE LAN<br>GbE2: Intel® i226V 2.5GbE LAN |
| Audio Codec | Realtek ALC888 |
| System Memory | 1x 262-Pin DDR5 4800 MT/s SO-DIMM. Max. 16GB (Non-ECC) |
| BIOS | AMI uEFI BIOS |
| Watchdog | Software Programmable Supports 1~255 sec. System Reset |
| TPM | TPM 2.0 |

| Display | |
|---|---|
| Display Port | 1x DP 1.4, up to 3840 x 2160 @ 60Hz |
| HDMI | 1x HDMI 2.1, up to 3840 x 2160 @ 60Hz |
| Multiple Display | 2x Independent Displays |

| Storage | |
|---|---|
| M.2 | 1x M.2 M-Key (2280), 128GB NVMe SSD (Default) |

| Expansion | |
|---|---|
| M.2 | 1x M.2 B-Key (2242/3042/3052), PCIe/USB 3.0, supports 4G LTE/5G (shared with SATA connector)<br>1x M.2 E-Key (2230), PCIe + USB 2.0, supports Wi-Fi/Bluetooth |

| I/O | |
|---|---|
| DisplayPort | 1x DisplayPort |
| HDMI | 1x HDMI |
| COM | 2x DB9<br>- COM1: RS-232/422/485<br>- COM2: RS-232<br>(Default configuration, shared with USB 2.0) |
| USB | 2x USB 3.2 Gen 2 Type-A<br>1x USB 3.2 Gen 1 Type-A<br>1x USB 3.2 Gen 1 Type-C<br>2x USB 2.0 Type-A (Optional, shared with 2x COM) |
| LAN | 2x 2.5GbE RJ45 |
| Audio | 1x Audio out (Default)<br>1x Speaker out (Optional), 5W Amplifier Support |
| SIM | 1x Dual Nano SIM Socket |
| Others | 6x Antenna Holes<br>1x Power button<br>1x Grounding Screw |

| Operating System | |
|---|---|
| Windows | Windows 10 / Windows 11 IoT Enterprise LTSC (64-bit) |
| Linux | Ubuntu 22.04 / 24.04 LTS<br>Linux 5.x / 6.x |

| Power | |
|---|---|
| Power Adapter | AC/DC 12V/5A, 60W |
| Power Mode | AT, ATX (Default ATX) |
| Power Supply Voltage | 9~36VDC |
| Power Connector | DC in Power Jack with Lock |
| Power Protection | OVP (Over Voltage Protection)<br>OCP (Over Current Protection)<br>Reverse Protection<br>DC Surge Protection |

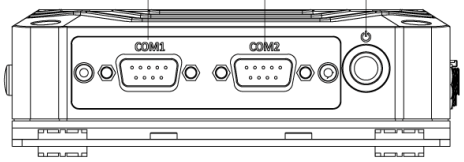
| Environment | |
|---|---|
| Operating Temperature | 0°C to 50°C |
| Storage Temperature | -20°C to 70°C |
| Relative Humidity | 10% to 95% (non-condensing) |
| Certification | CE, FCC Class B, UL 61010, UKCA, ICES |
| Vibration | With SSD: 5 Grms (5 - 500 Hz, 0.5 hr/axis) |
| Shock | With SSD: 50G half-sin 11ms |
| ESD | 4K / 8K (Option 8K/15K) |

| Physical | |
|---|---|
| Dimensions | 225 (W) x 130 (D) x 41 (H) mm |
| Weights | 1.2 kg |
| Construction | Aluminum Alloy |
| Mounting Options | Wall Mounting<br>VESA Mounting<br>DIN-Rail Mounting (Optional) |

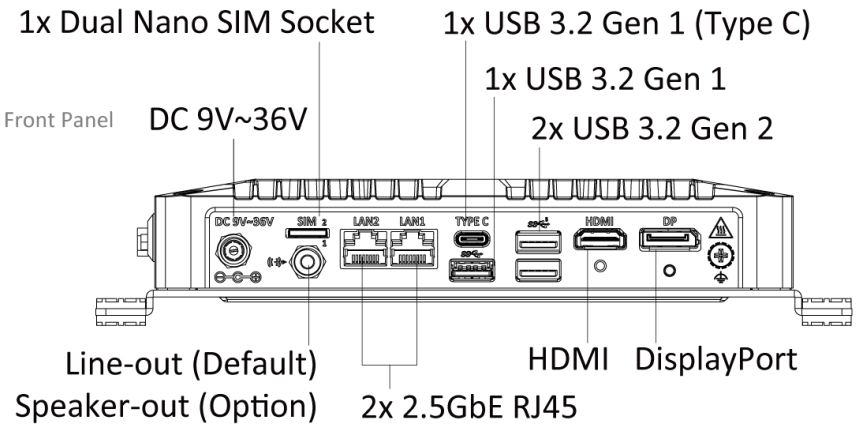
* All specifications and photos are subject to change without notice.

## External I/O Mechanical Layout

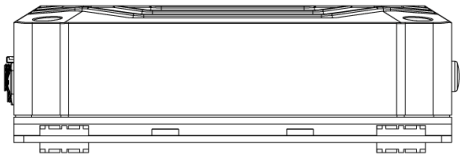
Side View



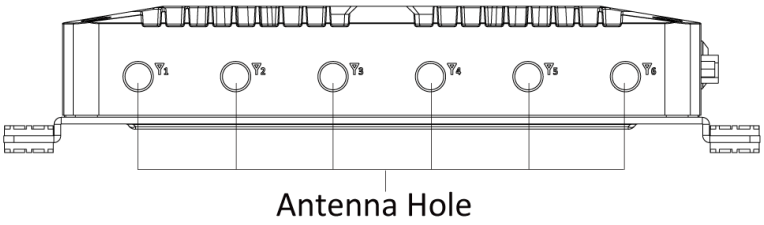

Front Panel




Side View

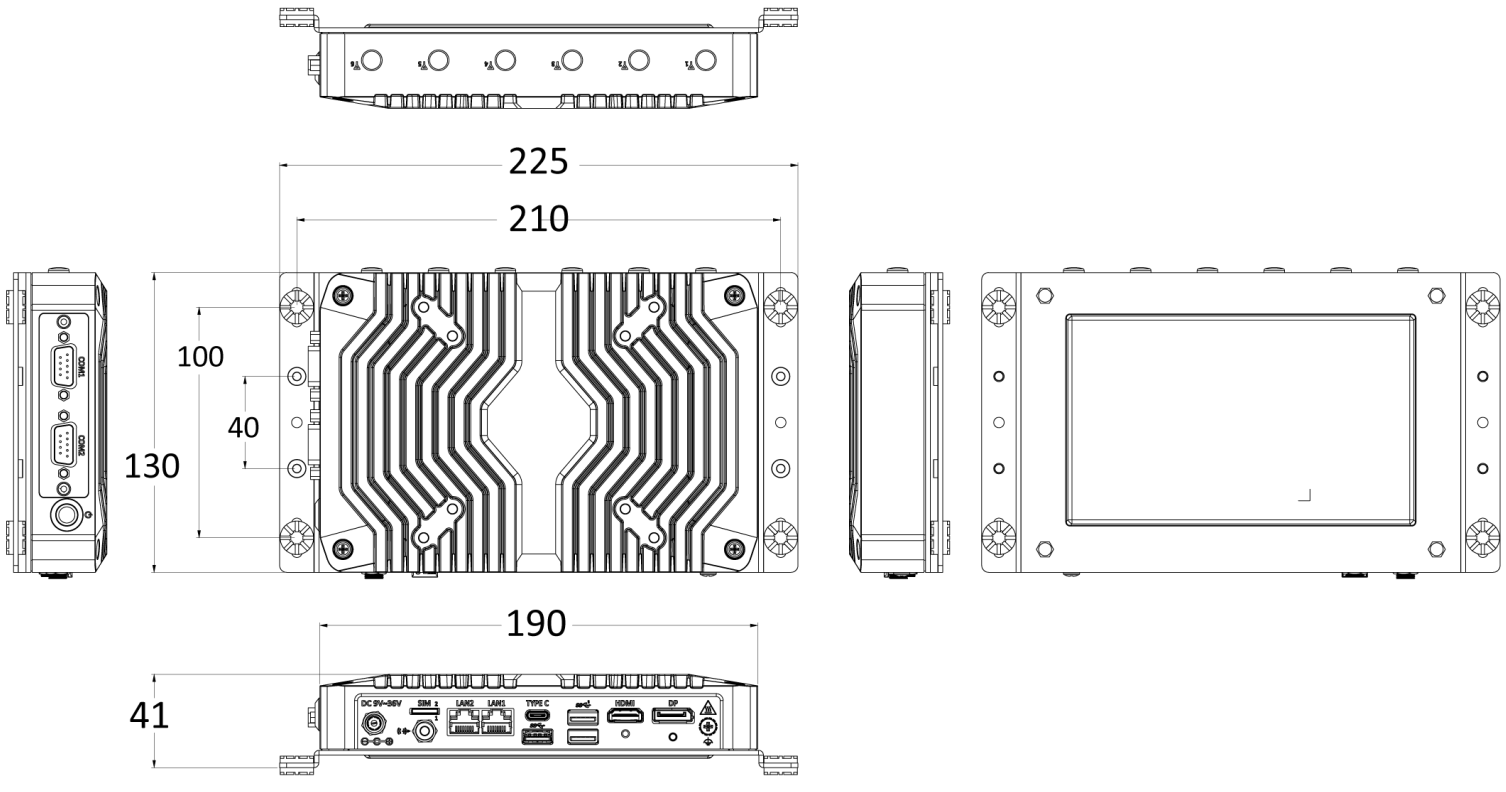


Rear Panel



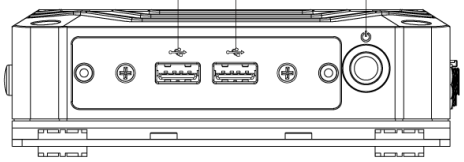

## Dimension

Unit: mm

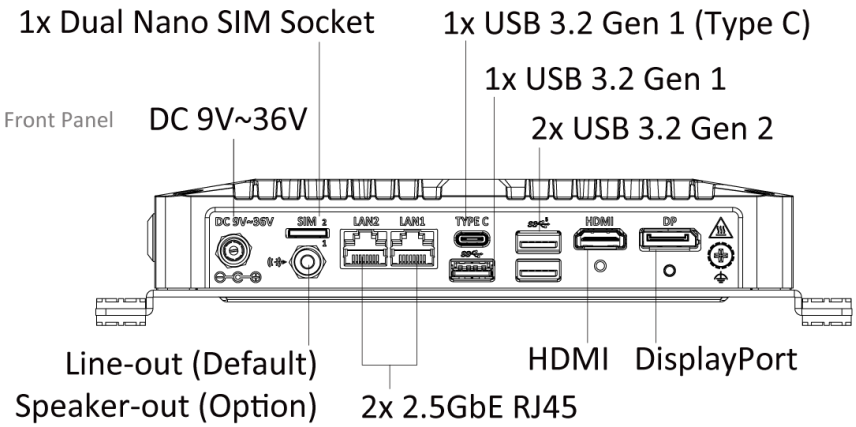


## External I/O Mechanical Layout

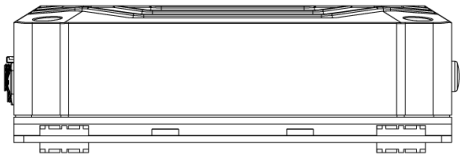
Side View



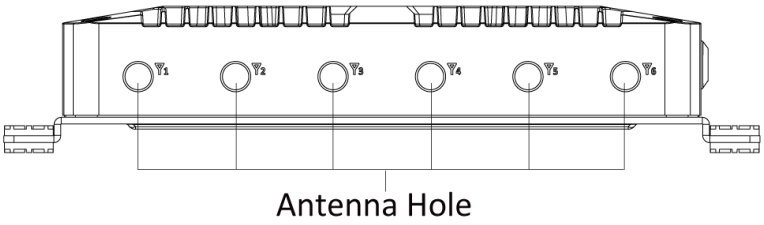

Front Panel




Side View

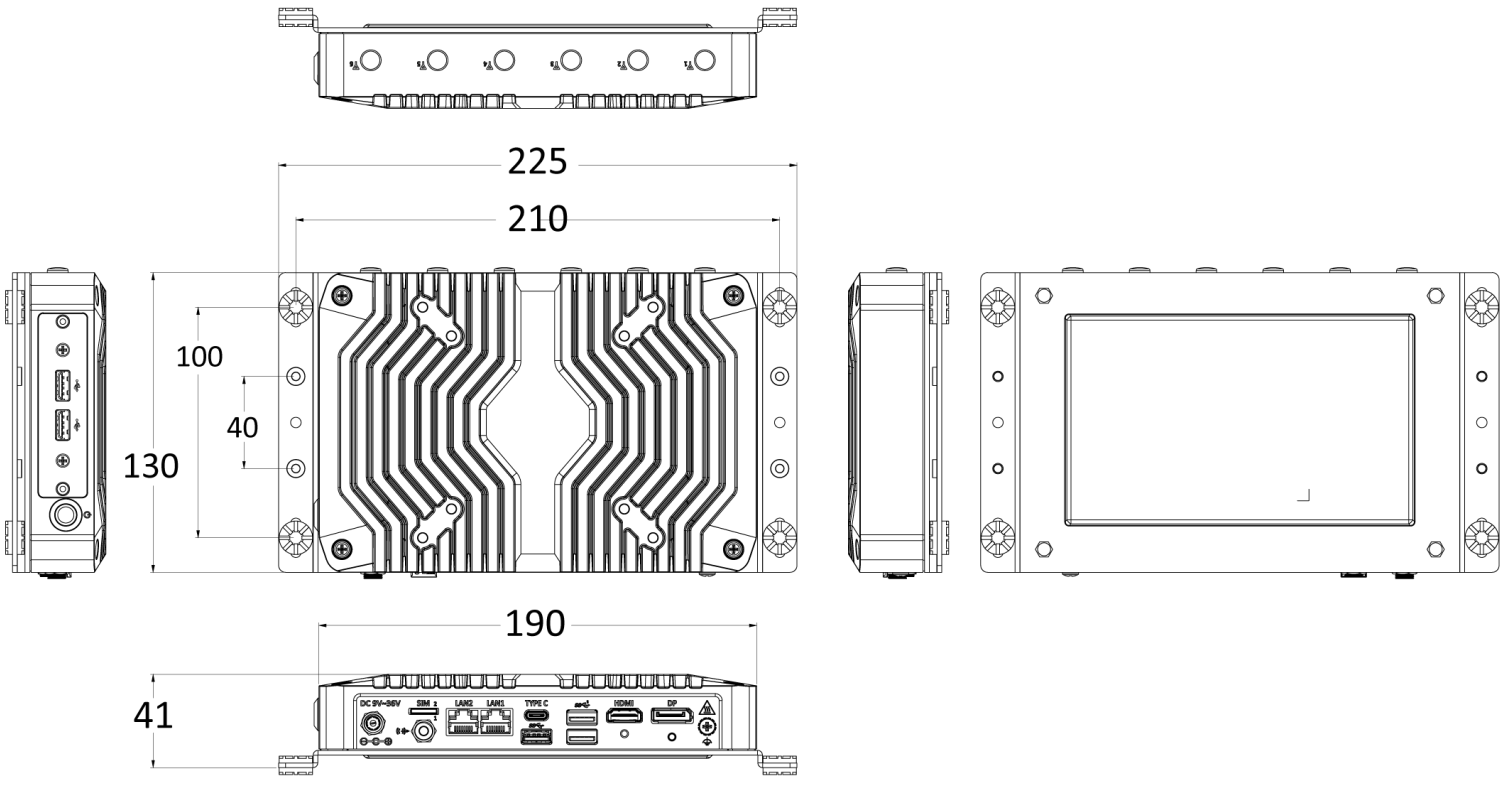


Rear Panel




## Dimension

Unit: mm



## Compliances and Standards

| | |
|---|---|
| Shock | With SSD: 50G half-sin 11ms<br>IEC60068-2-27:2008<br>Designed to comply with MIL-STD-810H Method 516.8 Procedure I |
| Vibration | With SSD: 5 Grms (5 - 500 Hz, 0.5 hr/axis)<br>IEC60068-2-64:2008<br>Designed to comply with MIL-STD-810H Method 514.8 Procedure I |
| Safety | UL Safety: UL 61010<br>CAN/CSA-C22.2 No. 61010-1-12, 3rd Ed.<br>CSA C22.2 No. 61010-2-201:18, 2nd Ed. |

## Available Models

| Model No. | Description |
|---|---|
| BCO-500-N97-2C | Semi-Rugged Fanless Mini Computer with Intel® N97 Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x COM |
| BCO-500-N97-2U | Semi-Rugged Fanless Mini Computer with Intel® N97 Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x USB |
| BCO-500-N150-2C | Semi-Rugged Fanless Mini Computer with Intel® N150 Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x COM |
| BCO-500-N150-2U | Semi-Rugged Fanless Mini Computer with Intel® N150 Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x USB |
| BCO-500-X7433RE-2C | Semi-Rugged Fanless Mini Computer with Intel® Atom® X7433RE Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x COM |
| BCO-500-X7433RE-2U | Semi-Rugged Fanless Mini Computer with Intel® Atom® X7433RE Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x USB |
| BCO-500-N97-2C-P | Semi-Rugged Fanless Mini Computer with Intel® N97 Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x COM, w/ Power Adapter |
| BCO-500-N97-2U-P | Semi-Rugged Fanless Mini Computer with Intel® N97 Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x USB, w/ Power Adapter |
| BCO-500-N150-2C-P | Semi-Rugged Fanless Mini Computer with Intel® N150 Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x COM, w/ Power Adapter |
| BCO-500-N150-2U-P | Semi-Rugged Fanless Mini Computer with Intel® N150 Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x USB, w/ Power Adapter |
| BCO-500-X7433RE-2C-P | Semi-Rugged Fanless Mini Computer with Intel® Atom® X7433RE Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x COM, w/ Power Adapter |
| BCO-500-X7433RE-2U-P | Semi-Rugged Fanless Mini Computer with Intel® Atom® X7433RE Processor, 1x DP, 1x HDMI, 3x USB-A, 1x USB-C, 2x LAN, 2x USB, w/ Power Adapter |

## Optional Accessories

| Model No. | Description |
|---|---|
| 1-E09A06012 | AC-DC Power Adapter 12V 5A 60W/Input 100-240V |
| 1-TPCD00001 | Power Cord, 3-pin UK Type, 180cm |
| 1-TPCD00002 | Power Cord, European Type, 180cm |
| 1-TPCD00003 | Power Cord, Japan Type, 180cm |
| 1-TPCD00005 | Power Cord, 3-pin US Type, 180cm |
| 1-TPWR00197 | 3P Terminal Block_Female(Molding) To DC Plug 5.5x2.5 With Lock L=100mm |
| 3-USB20K01S10 | Dual USB 2.0 Cable Module Kit |
| 3-2COM0K02S10 | COM Cable Module Kit |

## Packing List

1x BCO-500-TWL Series Fanless Mini Computer
1x Adapter 60W 12V 5A (selected models only)

## US Exports And Tariff Codes

| | |
|---|---|
| ECCN | 5A992.c |
| HTS | 8471.50.0150 |
| Schedule B | 84.71 |

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