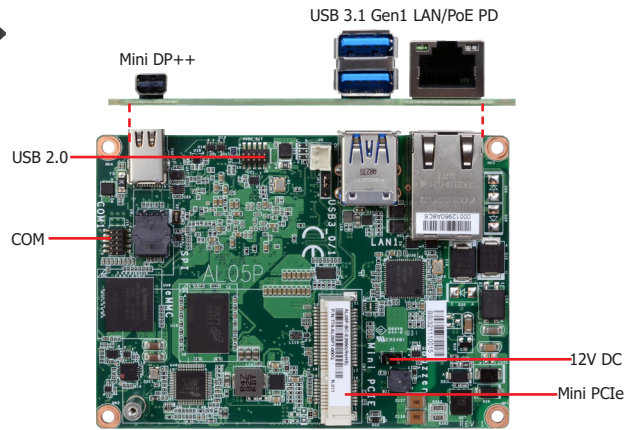
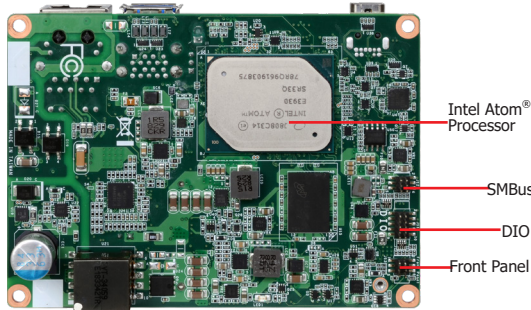


# AL05P

Atom



Top View



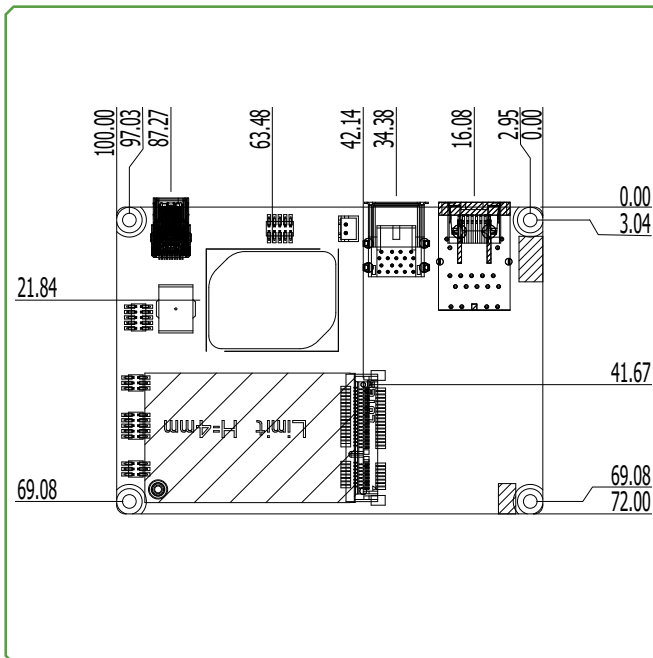
Bottom View

## Features

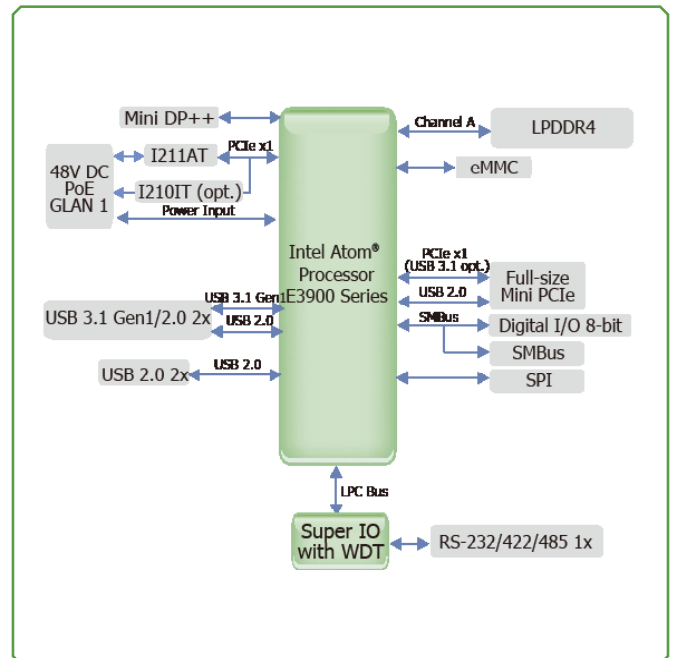
- Small form factor 2.5" Pico-ITX for space-limited applications
- PoE single board solution support PoE PD 48VDC
- PoE PD IEEE 802.3AF with isolation protection +0.5KV
- Support LPDDR4 memory down up to 4GB
- Expansion and Storage: 1 Mini PCIe, 1 SMBus, 1 eMMC
- Rich I/O: 1 LAN, 1 COM, 2 USB 3.1 Gen1, 2 USB 2.0



## Mechanical Drawing



## Block Diagram



## Specifications

|                               |                              |  |                                  |
|-------------------------------|------------------------------|--|----------------------------------|
| <b>SYSTEM</b>                 | <b>Processor</b>             | Intel Atom® Processor E3900 Series, BGA 1296<br>Intel Atom® x5-E3940 Processor, Quad Core, 2M Cache, 1.6GHz (1.8GHz), 9.5W<br>Intel Atom® x5-E3930 Processor, Dual Core, 2M Cache, 1.3GHz (1.8GHz), 6.5W<br>Intel® Pentium® Processor N4200, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W<br>Intel® Celeron® Processor N3350, Dual Core, 2M Cache, 1.1GHz (2.4GHz), 6W |                                  |
|                               | <b>Memory</b>                | SDRAM Memory Down up to 4GB  | Single Channel DDR4 2400MHz      |
|                               | <b>BIOS</b>                  | Insyde SPI 128Mbit (supports UEFI boot only)   |                                  |
| <b>GRAPHICS</b>               | <b>Controller</b>            | Intel® HD Graphics   |                                  |
|                               | <b>Feature</b>               | OpenGL 4.2, Direct X 11.1, OpenCL 1.2, OGL ES 3.0<br>HW Decode: H.264, MPEG2, VC1, VP8, H.265, MPEG4<br>HW Encode: H.264, MPEG2, MPEG4   |                                  |
|                               | <b>Display</b>               | 1 x Mini DP++<br>Mini DP++: resolution up to 4096x2160 @ 60Hz  |                                  |
| <b>EXPANSION</b>              | <b>Interface</b>             | 1 x Full-size Mini PCIe (PCIe/USB 2.0, optional USB 3.1 Gen1/USB 2.0)  |                                  |
| <b>Storage</b>                | <b>Storage</b>               | 1 x 16GB/32GB/64GB eMMC  |                                  |
| <b>ETHERNET</b>               | <b>Controller</b>            | 1 x Intel® I211AT PCIe (10/100/1000Mbps)<br>1 x Intel® I210IT PCIe (10/100/1000Mbps) (available upon request)  |                                  |
| <b>REAR I/O</b>               | <b>Ethernet</b>              | 1 x GbE (RJ-45)  |                                  |
|                               | <b>USB</b>                   | 2 x USB 3.1 Gen1   |                                  |
|                               | <b>Display</b>               | 1 x Mini DP++  |                                  |
| <b>INTERNAL I/O</b>           | <b>Serial</b>                | 1 x RS-232/422/485 (1.27mm pitch)  |                                  |
|                               | <b>USB</b>                   | 2 x USB 2.0 (1.27mm pitch)   |                                  |
|                               | <b>DIO</b>                   | 1 x 8-bit DIO  |                                  |
|                               | <b>SMBus</b>                 | 1 x SMBus  |                                  |
| <b>WATCHDOG TIMER</b>         | <b>Output &amp; Interval</b> | System Reset, Programmable via Software from 1 to 255 Seconds  |                                  |
| <b>SECURITY</b>               | <b>TPM</b>                   | fTPM 2.0   |                                  |
| <b>POWER</b>                  | <b>Type</b>                  | 48VDC PoE  |                                  |
|                               | <b>Connector</b>             | PoE LAN  |                                  |
|                               | <b>RTC Battery</b>           | CR2032 Coin Cell   |                                  |
|                               | <b>Consumption</b>           | Typical: E3950:12V @ 0.33A (3.96Watt)<br>Max.: E3950:12V @ 1.76A (21.12Watt)   |                                  |
| <b>OS SUPPORT (UEFI Only)</b> | <b>Microsoft/Linux</b>       | Windows 10 IoT Enterprise (64-bit)   | Linux                            |
| <b>ENVIRONMENT</b>            | <b>Temperature</b>           | Operating: 0 to 60°C, -20 to 70°C<br>Storage: -40 to 85°C  |                                  |
|                               | <b>Humidity</b>              | Operating: 5 to 90% RH   | Storage: 5 to 90% RH             |
|                               | <b>MTBF</b>                  | TBD  |                                  |
|                               | <b>MECHANICAL</b>            | <b>Dimensions</b>  | 2.5" Pico-ITX Form Factor        |
| <b>Height</b>                 |                              | PCB: 1.6mm   | Top Side: 15mm, Bottom Side: 8mm |

## Ordering Information

| Model Name     | P/N             | Processor | Memory | eMMC | Display | GbE | RS-232/422/485 | USB 3.1 Gen1 | USB 2.0 | Power      | Thermal | Temp.       |
|----------------|-----------------|-----------|--------|------|---------|-----|----------------|--------------|---------|------------|---------|-------------|
| AL05P-BC-23E30 | 770-AL05P1-000G | X5-E3930  | 2GB    | 32GB | 1       | 1   | 1              | 2            | 2       | PoE PD 48V | Fanless | 0 to 60°C   |
| AL05P-BC-23E40 | 770-AL05P1-100G | X5-E3940  | 2GB    | 32GB | 1       | 1   | 1              | 2            | 2       | PoE PD 48V | Fanless | 0 to 60°C   |
| AL05P-BC-23N50 | 770-AL05P1-200G | N3350     | 2GB    | 32GB | 1       | 1   | 1              | 2            | 2       | PoE PD 48V | Fanless | 0 to 60°C   |
| AL05P-EC-23E30 | 770-AL05P1-400G | X5-E3930  | 2GB    | 32GB | 1       | 1   | 1              | 2            | 2       | PoE PD 48V | Fanless | -20 to 70°C |
| AL05P-EC-23E40 | 770-AL05P1-500G | X5-E3940  | 2GB    | 32GB | 1       | 1   | 1              | 2            | 2       | PoE PD 48V | Fanless | -20 to 70°C |

Note: N4200 is supported upon request with MOQ requirement.

## Packing List

|                                  |  |
|----------------------------------|--|
| • 1 AL05P board                  |  |
| • 1 Heat spreader (Height: 15mm) | E Series CPU: A71-808315-000G<br>N Series CPU: A71-808315-010G |

## Optional Items

|   |                 |
|---|-----------------|
| • USB port cable (Length: 200mm)                                    | A81-001061-016G |
| • 1 COM port cable (Length: 300mm)                                  | A81-015050-016G |
| • Heat sink for E series CPU (0 to 60°C / Wide temp., Height: 27mm) | A71-008116-000G |
| • Heat sink for N series CPU (0 to 60°C, Height: 28.1mm)            | A71-008116-010G |