

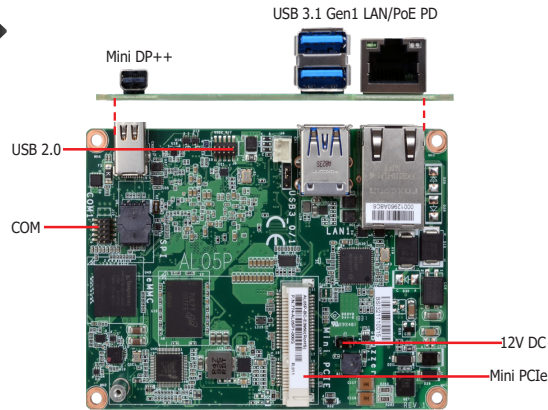


## Intel Atom® Processor E3900 Series 2.5" Pico-ITX

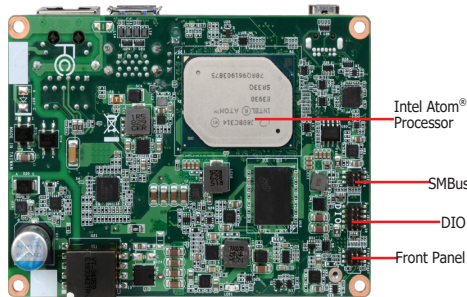


### AL05P

Atom



Top View



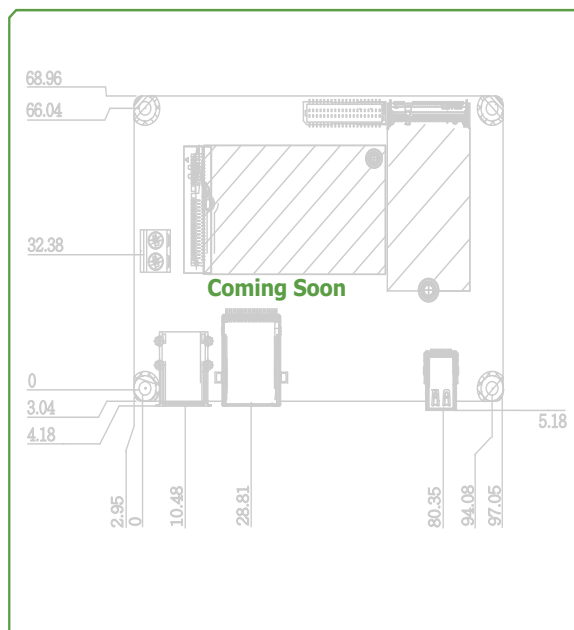
Bottom View

#### Features

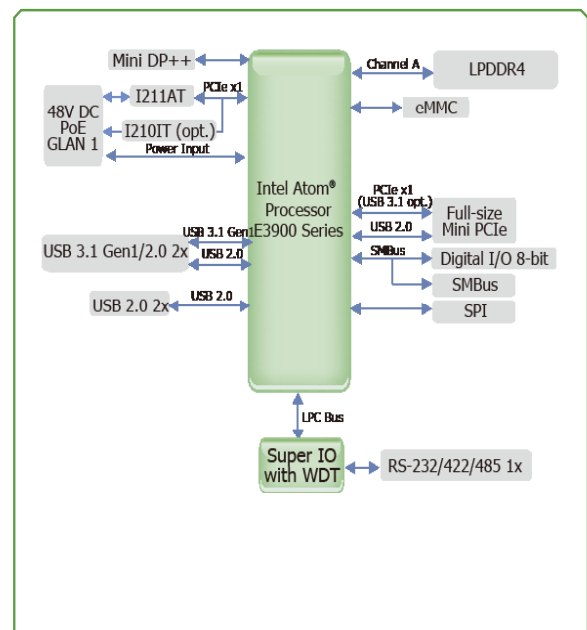
- Small form factor 2.5" Pico-ITX for space-limited applications
- PoE single board solution support PoE PD 48VDC
- PoE PD IEEE 802.3AF with isolation protection +0.5KV
- Support LPDDR4 memory down up to 4GB
- Expansion and Storage: 1 Mini PCIe, 1 SMBus, 1 eMMC
- Rich I/O: 1 LAN, 1 COM, 2 USB 3.1 Gen1,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



#### Mechanical Drawing



#### Block Diagram





## Specifications

|                        |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SYSTEM                 | Processor         | Intel Atom <sup>®</sup> Processor E3900 Series, BGA 1296<br>Intel Atom <sup>®</sup> x5-E3940 Processor, Quad Core, 2M Cache, 1.6GHz (1.8GHz), 9.5W<br>Intel Atom <sup>®</sup> x5-E3930 Processor, Dual Core, 2M Cache, 1.3GHz (1.8GHz), 6.5W<br>Intel <sup>®</sup> Pentium <sup>®</sup> Processor N4200, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W<br>Intel <sup>®</sup> Celeron <sup>®</sup> Processor N3350, Dual Core, 2M Cache, 1.1GHz (2.4GHz), 6W |
|                        | Memory            | SDRAM Memory Down up to 4GB<br>Single Channel DDR4 2400MHz                                                                                                                                                                                                                                                                                                                                                                                             |
|                        | BIOS              | Insyde SPI 128Mbit (supports UEFI boot only)                                                                                                                                                                                                                                                                                                                                                                                                           |
|                        | Controller        | Intel <sup>®</sup> HD Graphics                                                                                                                                                                                                                                                                                                                                                                                                                         |
| GRAPHICS               | Feature           | 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                                                                                                                                                                                                                                                                                                                 |
|                        | Display           | 1 x Mini DP++<br>Mini DP++: resolution up to 4096x2160 @ 60Hz                                                                                                                                                                                                                                                                                                                                                                                          |
|                        | Interface         | 1 x Full-size Mini PCIe (PCIe/USB 2.0, optional USB 3.1 Gen1/USB 2.0)                                                                                                                                                                                                                                                                                                                                                                                  |
| EXPANSION              | Storage           | 1 x 16GB/32GB/64GB eMMC                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ETHERNET               | Controller        | 1 x Intel <sup>®</sup> I211AT PCIe (10/100/1000Mbps)<br>1 x Intel <sup>®</sup> I210IT PCIe (10/100/1000Mbps) (available upon request)                                                                                                                                                                                                                                                                                                                  |
| REAR I/O               | Ethernet          | 1 x GbE (RJ-45)                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                        | USB               | 2 x USB 3.1 Gen1                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                        | Display           | 1 x Mini DP++                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| INTERNAL I/O           | Serial            | 1 x RS-232/422/485 (1.27mm pitch)                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                        | USB               | 2 x USB 2.0 (1.27mm pitch)                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                        | DIO               | 1 x 8-bit DIO                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                        | SMBus             | 1 x SMBus                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| WATCHDOG TIMER         | Output & Interval | System Reset, Programmable via Software from 1 to 255 Seconds                                                                                                                                                                                                                                                                                                                                                                                          |
| SECURITY               | TPM               | FTPM 2.0                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| POWER                  | Type              | 48VDC PoE                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Connector         | PoE LAN                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                        | RTC Battery       | CR2032 Coin Cell                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OS SUPPORT (UEFI Only) | Microsoft/Linux   | Windows 10 IoT Enterprise (64-bit)<br>Linux                                                                                                                                                                                                                                                                                                                                                                                                            |
| ENVIRONMENT            | Temperature       | Operating: 0 to 60°C, -20 to 70°C<br>Storage: -40 to 85°C                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Humidity          | Operating: 5 to 90% RH<br>Storage: 5 to 90% RH                                                                                                                                                                                                                                                                                                                                                                                                         |
| MECHANICAL             | Dimensions        | 2.5" Pico-ITX Form Factor<br>100mm (3.94") x 72mm (2.83")                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Height            | PCB: 1.6mm<br>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 |

Note: N4200 is supported upon request with MOQ requirement.

## Packing List

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

## Optional Items

|                                                       |                                                                      |
|-------------------------------------------------------|----------------------------------------------------------------------|
| • USB port cable (Length: 200mm)                      | A81-001061-016G                                                      |
| • 1 COM port cable (Length: 300mm)                    | A81-015038-016G                                                      |
| • Heat sink for E series CPU 0 to 60°C (Height: 28mm) | E Series CPU:<br>A71-008116-000G<br>N Series CPU:<br>A71-008116-010G |

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