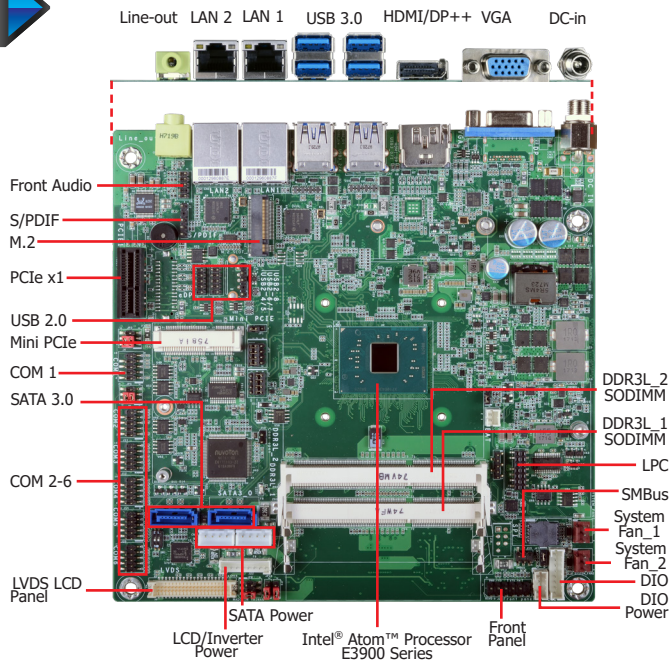




# AL171/AL173

Atom



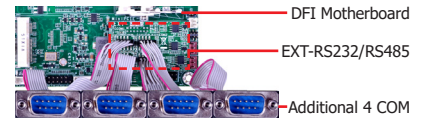
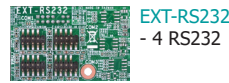
\* The photos above refer to AL173.

## Features

- 2 DDR3L 1867MHz SODIMM up to 8GB
- Three independent displays: (VGA/DP++) + (HDMI/DP++) + (LVDS/eDP)
- DP++ resolution supports up to 4096x2160 @ 60Hz
- Multiple expansion: 1 M.2 B key, 1 PCIe x1, 1 Mini PCIe
- LPC EXT-RS232/485 module extends additional 4 COM ports
- Rich I/O: 2 Intel GbE, 6 COM, 4 USB 3.0, 5 USB 2.0



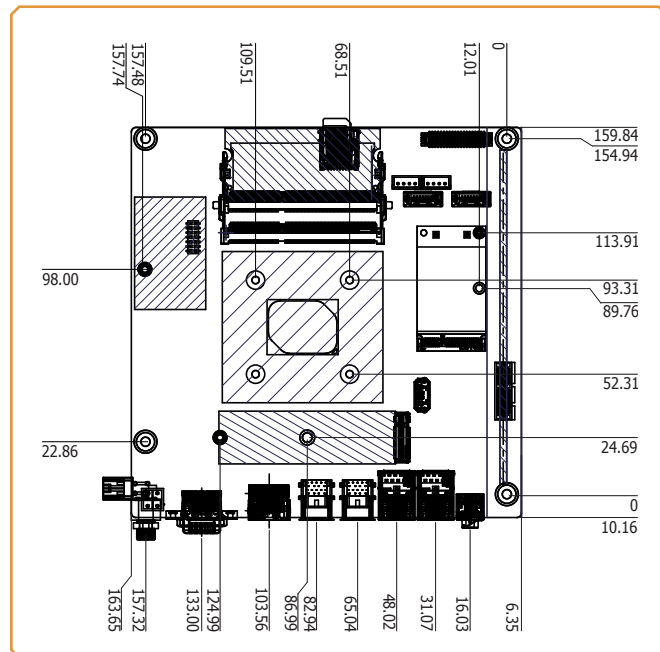
## 2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



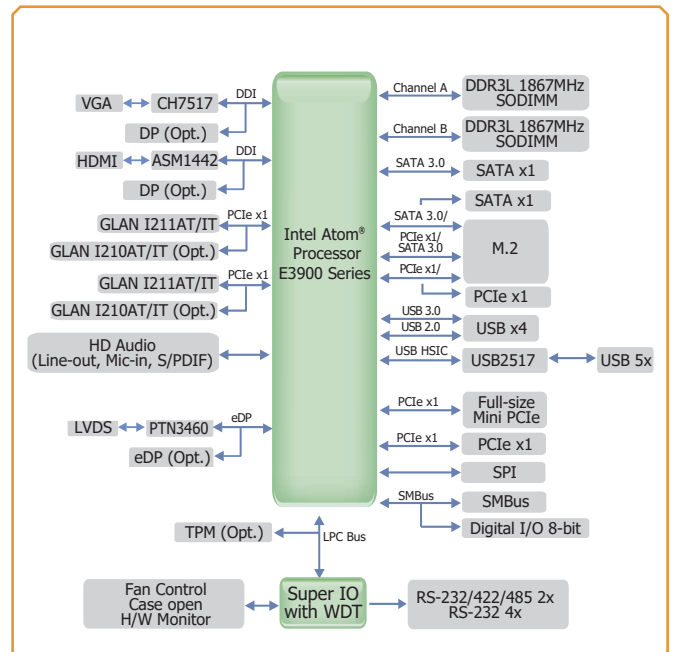
## Ordering Information

| Model Name     | P/N             | Processor | Memory   | VGA/DP++ | HDMI/DP++ | LVDS/eDP | RS-232/422/485 | RS-232 | USB 3.0 | USB 2.0 | Power     | Thermal | Temp.       |
|----------------|-----------------|-----------|----------|----------|-----------|----------|----------------|--------|---------|---------|-----------|---------|-------------|
| AL171-CB-N4200 | 770-AL1713-000G | N4200     | 2 SODIMM | VGA      | DP++      | LVDS     | 2              | 4      | 4       | 5       | 12V DC    | Fanless | 0 to 60°C   |
| AL171-CT-E3930 | 770-AL1713-100G | E3930     | 2 SODIMM | VGA      | DP++      | LVDS     | 2              | 4      | 4       | 5       | 12V DC    | Fanless | -40 to 85°C |
| AL171-CB-E3950 | 770-AL1713-300G | E3950     | 2 SODIMM | VGA      | DP++      | LVDS     | 2              | 4      | 4       | 5       | 12V DC    | Fanless | 0 to 60°C   |
| AL171-CT-E3950 | 770-AL1713-800G | E3950     | 2 SODIMM | VGA      | DP++      | LVDS     | 2              | 4      | 4       | 5       | 12V DC    | Fanless | -40 to 85°C |
| AL173-CB-N4200 | 770-AL1733-000G | N4200     | 2 SODIMM | VGA      | DP++      | LVDS     | 2              | 4      | 4       | 5       | 15-36V DC | Fanless | 0 to 60°C   |
| AL173-CT-E3930 | 770-AL1733-100G | E3930     | 2 SODIMM | VGA      | DP++      | LVDS     | 2              | 4      | 4       | 5       | 15-36V DC | Fanless | -40 to 85°C |
| AL173-CT-E3950 | 770-AL1733-800G | E3950     | 2 SODIMM | VGA      | DP++      | LVDS     | 2              | 4      | 4       | 5       | 15-36V DC | Fanless | -40 to 85°C |

## Mechanical Drawing



## Block Diagram



## Specifications

|                               |                              |  |  |
|-------------------------------|------------------------------|--|--|
| <b>SYSTEM</b>                 | <b>Processor</b>             | Intel Atom® Processor E3900 Family, BGA 1296<br>Intel Atom® x7-E3950 Processor, Quad Core, 2M Cache, 1.6GHz (2.0GHz), 12W<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® N4200 Processor, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W |  |
|                               | <b>Memory</b>                | Two 204-pin SODIMM up to 8GB   | Dual Channel DDR3L 1867MHz   |
|                               | <b>BIOS</b>                  | Insyde SPI 128Mbit (supports UEFI boot only)   |  |
| <b>GRAPHICS</b>               | <b>Controller</b>            | Intel® HD Graphics GT Series   |  |
|                               | <b>Feature</b>               | OpenGL 5.0, DirectX 12, OpenCL 2.1<br>HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H.265, VP8, VP9, MVC<br>HW Encode: AVC/H.264, JPEG/MJPEG, HEVC/H.265, VP8, VP9, MVC  |  |
|                               | <b>Display</b>               | 1 x VGA/DP++<br>1 x HDMI/DP++<br>1 x LVDS/eDP  | VGA: resolution up to 1920x1200 @ 60Hz<br>LVDS: dual channel 48-bit, resolution up to 1920x1200 @ 60Hz<br>HDMI: resolution up to 3840x2160 @ 30Hz<br>DP++: resolution up to 4096x2160 @ 60Hz<br>eDP: resolution up to 3840x2160 @ 60Hz |
|                               | <b>Triple Displays</b>       | VGA + HDMI + LVDS<br>VGA + HDMI + eDP<br>DP + HDMI + LVDS<br>DP + HDMI + eDP   | VGA + DP + LVDS<br>VGA + DP + eDP<br>DP + DP + LVDS<br>DP + DP + eDP   |
| <b>EXPANSION</b>              | <b>Interface</b>             | 1 x PCIe x1 (Gen 2)<br>1 x M.2 B Key 2242/2280 (PCIe/SATA/USB)   | 1 x Full-size Mini PCIe (PCIe/USB)   |
| <b>AUDIO</b>                  | <b>Audio Codec</b>           | Realtek ALC885-VD2-GR  |  |
| <b>ETHERNET</b>               | <b>Controller</b>            | -40~85°C: 2 x Intel® I211IT/I210IT PCIe (10/100/1000Mbps) or<br>0-60°C: 2 x Intel® I211AT/I210AT PCIe (10/100/1000Mbps)  |  |
| <b>REAR I/O</b>               | <b>Ethernet</b>              | 2 x GbE (RJ-45)  |  |
|                               | <b>USB</b>                   | 4 x USB 3.0  |  |
|                               | <b>Display</b>               | 1 x HDMI/DP++  | 1 x VGA/DP++   |
|                               | <b>Audio</b>                 | 1 x Line-out   |  |
| <b>INTERNAL I/O</b>           | <b>Serial</b>                | 2 x RS-232/422/485 (RS-232 w/ power) (2.0mm pitch)<br>4 x RS-232 (2.0mm pitch)   |  |
|                               | <b>USB</b>                   | 4 x USB 2.0 (2.0mm pitch)<br>1 x USB 2.0 (2.54mm pitch) or 1 x Vertical USB 2.0 (type A) (available upon request)  |  |
|                               | <b>Display</b>               | 1 x LVDS LCD Panel Connector<br>1 x LCD/Inverter Power<br>1 x eDP LCD Panel Connector  |  |
|                               | <b>Audio</b>                 | 1 x S/PDIF<br>1 x Audio (Line-out/Mic-in)  |  |
|                               | <b>SATA</b>                  | 2 x SATA 3.0 (up to 6Gb/s)   |  |
|                               | <b>DIO</b>                   | 1 x 8-bit DIO  |  |
|                               | <b>LPC</b>                   | 1 x LPC (supports LPC EXT-RS232/RS485 module)  |  |
|                               | <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>                   | dTPM2.0 (opt.)   |  |
| <b>POWER</b>                  | <b>Type</b>                  | Single 12V +/-10% DC (AL171)   | Wide Range 15~36V (AL173)  |
|                               | <b>Connector</b>             | DC-in Jack   | Right Angle Connector (4-pin) (available upon request)<br>Vertical Type Connector (4-pin) (available upon request)   |
|                               | <b>Consumption</b>           | Idle: E3950 12W: 12V @ 0.59A (7.08W)<br>Max: E3950 12W: 12V @ 2.23A (26.76W)   |  |
|                               | <b>RTC Battery</b>           | CR2032 Coin Cell   |  |
| <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, -40 to 85°C  | Storage: -40 to 85°C   |
|                               | <b>Humidity</b>              | Operating: 5 to 90% RH   | Storage: 5 to 90% RH   |
|                               | <b>MTBF</b>                  | AL171: 364,946 hrs @ 25°C; 201,162 hrs @ 45°C ; 122,570 hrs @ 60°C<br>AL173: 358,096 hrs @ 25°C; 197,806 hrs @ 45°C ; 119,639 hrs @ 60°C<br>Calculation model: Telcordia Issue 2<br>Environment: GB, GC – Ground Benign, Controlled  |  |
| <b>MECHANICAL</b>             | <b>Dimensions</b>            | Mini-ITX Form Factor   | 170mm (6.7") x 170mm (6.7")  |
|                               | <b>Height</b>                | PCB: 1.6mm   | Top Side: 16.34mm, Bottom Side: 3.30mm   |
| <b>CERTIFICATION</b>          | CE, FCC, RoHS, UL            |  |  |

## Packing List

|  |                 |
|--|-----------------|
| • 1 AL171/AL173 motherboard                          |                 |
| • 1 COM port cable (Length: 250mm, 1 x COM port)     | A81-015011-001G |
| • 1 Serial ATA data with power cable (Length: 300mm) | A81-002013-000G |
| • 1 Heatsink   |                 |

## Optional Items

|  |                 |
|--|-----------------|
| • USB port cable (Length: 200mm)                   | A81-001032-016G |
| • COM port cable (Length: 250mm, 1 x COM port)     | A81-015011-001G |
| • Serial ATA data with power cable (Length: 300mm) | A81-002013-000G |
| • LPC EXT-RS232 module (4 x RS232 ports)           | 770-EXTRS1-000G |
| • LPC EXT-RS485 module (4 x RS485 ports)           | 770-EXTRS1-100G |
| • I/O shield (DP++)                                | A49-AL171D-000G |
| • I/O shield (VGA)                                 | A49-AL171V-000G |