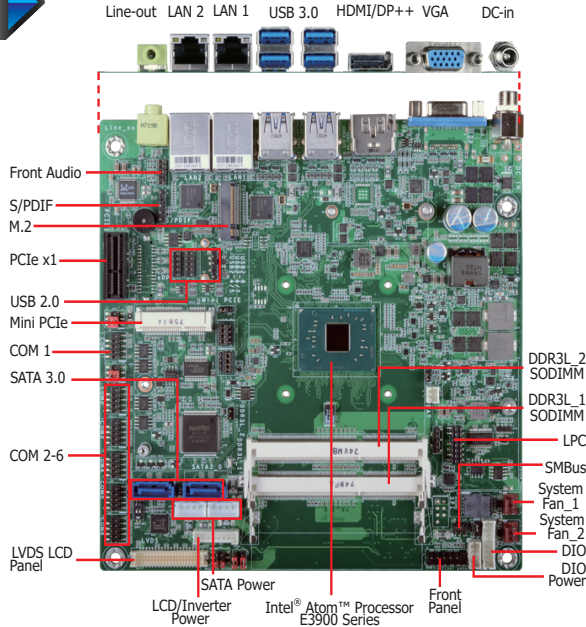




**Intel® Atom™ Processor E3900 Series
Mini-ITX**



AL171/AL173



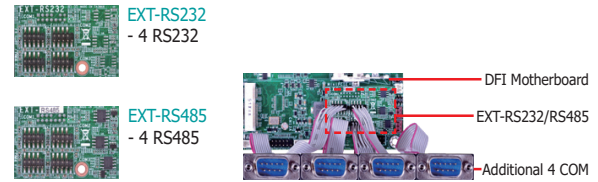
* The photos above refer to AL173.

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



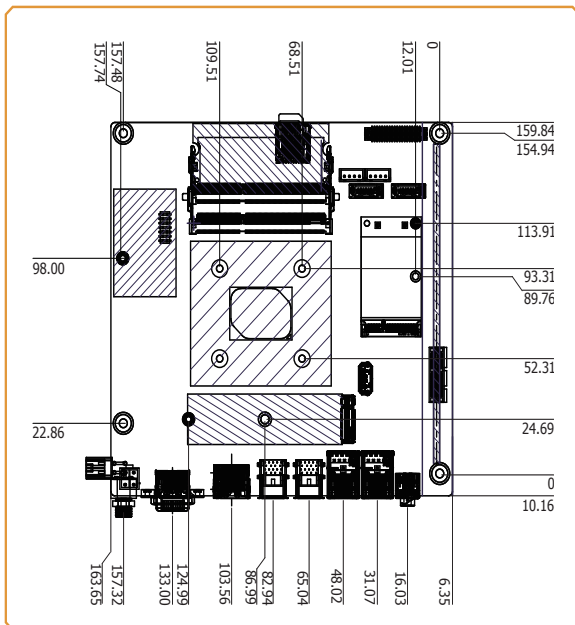
2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



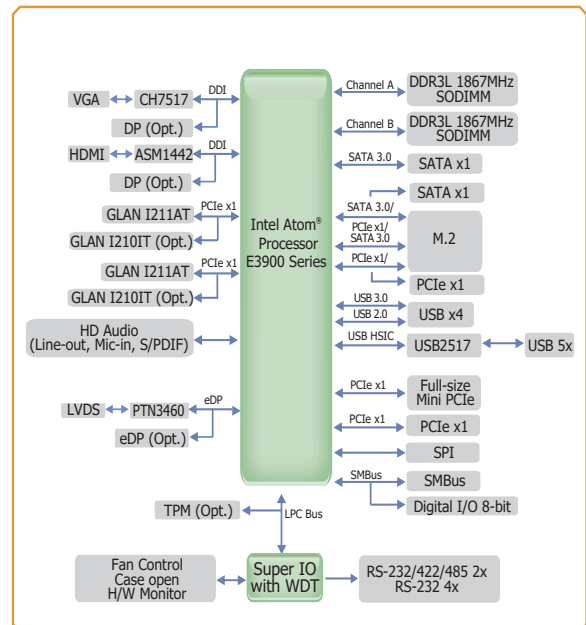
Ordering Information

| 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-AL1712-000G | N4200 | 2 SODIMM | VGA | DP++ | LVDS | 2 | 4 | 4 | 5 | 12V DC | Fanless | 0 to 60°C |
| AL171-CT-E3930 | 770-AL1712-100G | E3930 | 2 SODIMM | VGA | DP++ | LVDS | 2 | 4 | 4 | 5 | 12V DC | Fanless | -40 to 85°C |
| AL171-CB-E3950 | 770-AL1712-300G | E3950 | 2 SODIMM | VGA | DP++ | LVDS | 2 | 4 | 4 | 5 | 12V DC | Fanless | 0 to 60°C |
| AL171-CT-E3950 | 770-AL1712-800G | E3950 | 2 SODIMM | VGA | DP++ | LVDS | 2 | 4 | 4 | 5 | 12V DC | Fanless | -40 to 85°C |
| AL173-CB-N4200 | 770-AL1732-000G | N4200 | 2 SODIMM | VGA | DP++ | LVDS | 2 | 4 | 4 | 5 | 15-36V DC | Fanless | 0 to 60°C |
| AL173-CT-E3930 | 770-AL1732-100G | E3930 | 2 SODIMM | VGA | DP++ | LVDS | 2 | 4 | 4 | 5 | 15-36V DC | Fanless | -40 to 85°C |
| AL173-CT-E3950 | 770-AL1732-800G | E3950 | 2 SODIMM | VGA | DP++ | LVDS | 2 | 4 | 4 | 5 | 15-36V DC | Fanless | -40 to 85°C |

Mechanical Drawing



Block Diagram





Specifications

| | | | |
|-------------------------------|------------------------|--|--|
| SYSTEM | Processor | Intel Atom® Processor E3900 Family, BGA 1296 Intel Atom® x7-E3950 Processor, Quad Core, 2M Cache, 1.6GHz (2.0GHz), 12W Intel Atom® x5-E3940 Processor, Quad Core, 2M Cache, 1.6GHz (1.8GHz), 9.5W Intel Atom® x5-E3930 Processor, Dual Core, 2M Cache, 1.3GHz (1.8GHz), 6.5W Intel® Pentium® N4200 Processor, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W | |
| | Memory | Two 204-pin SODIMM up to 8GB | Dual Channel DDR3L 1867MHz |
| | BIOS | Insyde SPI 128Mbit (supports UEFI boot only) | |
| | GRAPHICS | Controller | Intel® HD Graphics GT Series |
| | Feature | OpenGL 5.0, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H.265, VP8, VP9, MVC HW Encode: AVC/H.264, JPEG/MJPEG, HEVC/H.265, VP8, VP9, MVC | |
| | Display | 1 x VGA/DP++ 1 x HDMI/DP++ 1 x LVDS/eDP | VGA: resolution up to 1920x1200 @ 60Hz LVDS: dual channel 48-bit, resolution up to 1920x1200 @ 60Hz HDMI: resolution up to 3840x2160 @ 30Hz DP++: resolution up to 4096x2160 @ 60Hz eDP: resolution up to 3840x2160 @ 60Hz |
| | Triple Displays | VGA + HDMI + LVDS VGA + HDMI + eDP DP + HDMI + LVDS DP + HDMI + eDP | VGA + DP + LVDS VGA + DP + eDP DP + DP + LVDS DP + DP + eDP |
| EXPANSION | Interface | 1 x PCIe x1 (Gen 2) 1 x M.2 B Key 2242/2280 (PCIe/SATA/USB) | 1 x Full-size Mini PCIe (PCIe/USB) |
| AUDIO | Audio Codec | Realtek ALC262-VC2-GR | |
| ETHERNET | Controller | -40~85°C: 2 x Intel® I210IT PCIe (10/100/1000Mbps) or 0-60°C: 2 x Intel® I211AT PCIe (10/100/1000Mbps) | |
| REAR I/O | Ethernet | 2 x GbE (RJ-45) | |
| | USB | 4 x USB 3.0 | |
| | Display | 1 x HDMI/DP++ | 1 x VGA/DP++ |
| | Audio | 1 x Line-out | |
| INTERNAL I/O | Serial | 2 x RS-232/422/485 (RS-232 w/ power) (2.0mm pitch) 4 x RS-232 (2.0mm pitch) | |
| | USB | 4 x USB 2.0 (2.0mm pitch) 1 x USB 2.0 (2.54mm pitch) or 1 x Vertical USB 2.0 (type A) (available upon request) | |
| | Display | 1 x LVDS LCD Panel Connector 1 x LCD/Inverter Power 1 x eDP LCD Panel Connector | |
| | Audio | 1 x S/PDIF 1 x Audio (Line-out/Mic-in) | |
| | SATA | 2 x SATA 3.0 (up to 6Gb/s) | |
| | DIO | 1 x 8-bit DIO | |
| | LPC | 1 x LPC (supports LPC EXT-RS232/RS485 module) | |
| | SMBus | 1 x SMBus | |
| | WATCHDOG TIMER | Output & Interval | System Reset, Programmable via Software from 1 to 255 Seconds |
| SECURITY | TPM | dTPM2.0 (opt.) | |
| POWER | Type | Single 12V +/-10% DC (AL171) | Wide Range 15~36V (AL173) |
| | Connector | DC-in Jack | Right Angle Connector (4-pin) (available upon request) Vertical Type Connector (4-pin) (available upon request) |
| | Consumption | Idle: E3950 12W: 12V @ 0.59A (7.08W) Max: E3950 12W: 12V @ 2.23A (26.76W) | |
| | RTC Battery | CR2032 Coin Cell | |
| OS SUPPORT (UEFI Only) | Microsoft/Linux | Windows 10 IoT Enterprise (64-bit) | Linux |
| ENVIRONMENT | Temperature | Operating: 0 to 60°C, -40 to 85°C | Storage: -40 to 85°C |
| | Humidity | Operating: 5 to 90% RH | Storage: 5 to 90% RH |
| | MTBF | AL171: 364,946 hrs @ 25°C; 201,162 hrs @ 45°C ; 122,570 hrs @ 60°C AL173: 358,096 hrs @ 25°C; 197,806 hrs @ 45°C ; 119,639 hrs @ 60°C Calculation model: Telcordia Issue 2 Environment: GB, GC – Ground Benign, Controlled | |
| | MECHANICAL | Dimensions | Mini-ITX Form Factor |
| | Height | PCB: 1.6mm | Top Side: 16.34mm, Bottom Side: 3.30mm |
| CERTIFICATION | 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 |

Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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