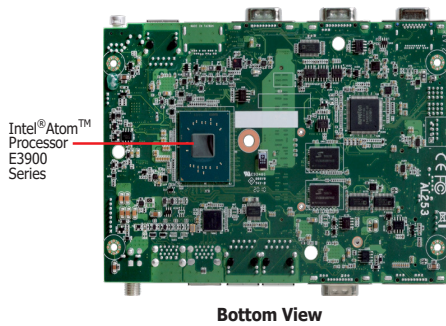
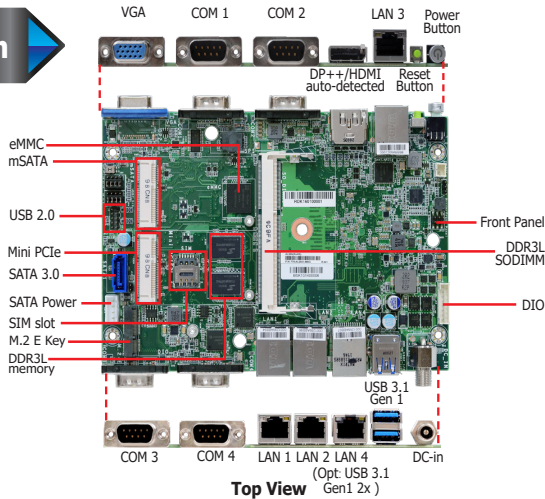




**Intel Atom® Processor E3900 Series
4" SBC**



AL253



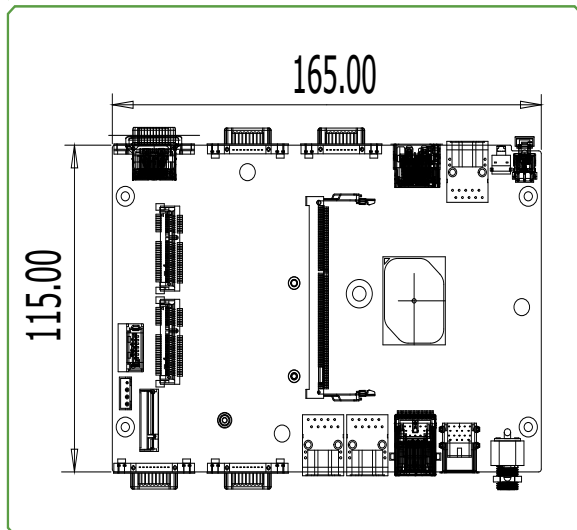
Features

- **2GB/4GB/8GB Memory onboard + one 204-pin SO-DIMM**
Dual Channel DDR3L 1866MHz
The system supports a combined maximum memory size of 8GB total
- **Two independent displays:**
DP++/HDMI (auto-detection) + VGA/DP(Opt.)
- **DP resolution up to 4096x2160 @ 60Hz**
- **Multiple OS support: Win 7/Win 10/Linux**
- **Rich I/O: max. 4 Intel GbE, 4 COM, 4 USB 3.1 Gen 1, 2 USB 2.0**

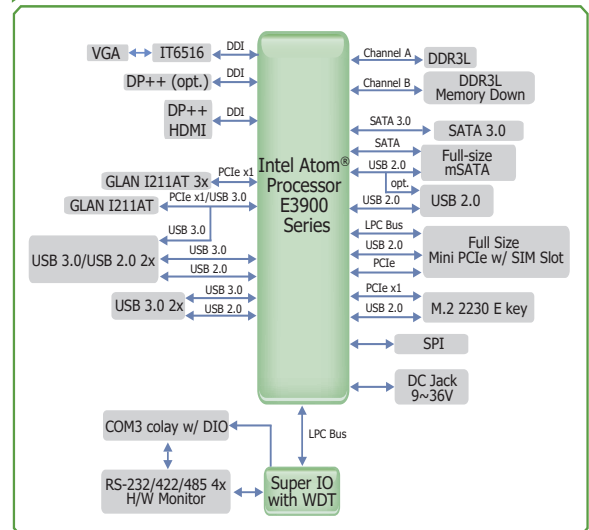
* Populated by default



Mechanical Drawing



Block Diagram





Specifications

| | | | |
|------------------------------------|------------------------------|--|--|
| SYSTEM | Processor | Intel Atom® Processor E3900 Series, 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), 6W Intel® Pentium® Processor N4200, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W | |
| | Memory | 2GB/4GB/8GB Memory onboard + one 204-pin SO-DIMM Dual Channel DDR3L 1866MHz The system supports a combined maximum memory size of 8GB total | |
| | BIOS | AMI SPI 128Mbit (support UEFI/legacy mode) | |
| GRAPHICS | Controller | Intel® HD Graphics | |
| | Feature | OpenGL 4.2, Direct X 11.1, OpenCL 1.2, OGL ES 3.0 HW Decode: H.264, MPEG2, VC1, VP8, H.265, MPEG4 HW Encode: H.264, MPEG2, MPEG4 | |
| | Display | 1 x DP++/HDMI (auto-detection) 1 x VGA/DP(opt.) | DP: resolution up to 4096x2160 @ 60Hz HDMI: resolution up to 3840x2160 @ 30Hz VGA: resolution up to 1920x1200 @ 60Hz |
| Dual Displays | DP++/HDMI + VGA/DP(opt.) | | |
| STORAGE | eMMC | 1 x 8G/16G/32G/64G (opt.) | |
| EXPANSION | Interface | 1 x Full-size mSATA (SATA, USB is available by BOM option) 1 x Full-size Mini PCIe (USB2.0/LPC/PCIe, PCIe is available for config. with 4 LAN) 1 x M.2 (2230 E Key) (PCIe/USB2.0) | |
| | ETHERNET | Controller 4 x Intel® I211AT PCIe, co-lay with I210IT (10/100/1000Mbps) | |
| REAR I/O | Ethernet | up to 4 x GbE (RJ-45) (1 x GbE colay 2 x USB 3.1 Gen1) | |
| | Serial | 4 x RS-232/422/485 (1 x RS-232/422/485 colay 1 x 8-bit DIO by jumper setting) | |
| | USB | up to 4 x USB 3.1 Gen1 (2 x USB 3.1 Gen1 colay 1 x GbE) | |
| | Display | 1 x DP++/HDMI (auto-detection) 1 x VGA/DP(opt.) | |
| INTERNAL I/O | USB | 2 x USB 2.0 (2.0mm pitch) | |
| | SATA | 1 x SATA 3.0 (up to 6Gb/s, support SSD only) | 1 x SATA Power |
| | DIO | 1 x 8-bit DIO | |
| | Other I/O | 1 x Front Panel | |
| WATCHDOG TIMER | Output & Interval | System Reset, Programmable via Software from 1 to 255 Seconds | |
| SECURITY | TPM | fTPM2.0 | |
| POWER | Type | 9~36V DC input | |
| | Connector | DC Jack | |
| | Consumption | Typical: E3950:12V, 5.88Watt Max.: E3950:12V, 18.84Watt | |
| | RTC Battery | CR2032 Coin Cell, link main board with cable | |
| OS SUPPORT | Microsoft/Linux | Windows 10 IoT Enterprise 64-bit Windows 7 (WES7) 32/64-bit (project support only) | 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 | 4305UE: 619,529 hrs @ 25°C; 407,983 hrs @ 45°C ; 281,090 hrs @ 60°C; 142,546 hrs @ 85°C Calculation model: Telcordia Issue 4 Environment: GB, GC – Ground Benign, Controlled | |
| MECHANICAL | Dimensions | 4" SBC Form Factor 165mm (6.49") x 115mm (4.53") | |
| | Height | PCB's thickness: 1.6mm Top Side (CPU side): 6.1mm, Bottom Side: 16.4mm | |
| STANDARD AND CERTIFICATIONS | Certifications | CE, FCC, RoHS, UKCA | |

Ordering Information

| Model Name | P/N | Processor | Memory | Display | GbE | RS232 /422/485 | USB 3.1 Gen 1 | USB 2.0 | Power | Thermal | Temperature |
|----------------|-----------------|-----------|----------------------------|-----------------|-----|----------------|---------------|---------|----------|---------|---------------|
| AL253-BN-40E50 | 770-AL2531-000G | x7-E3950 | 1 SODIMM + 4GB memory down | DP++/HDMI + VGA | 4 | 4 | 2 | 2 | 9~36V DC | Fanless | 0°C to 60°C |
| AL253-BN-20E30 | 770-AL2531-100G | x5-E3930 | 1 SODIMM + 2GB memory down | DP++/HDMI + VGA | 4 | 4 | 2 | 2 | 9~36V DC | Fanless | 0°C to 60°C |
| AL253-TN-40E50 | 770-AL2531-200G | x7-E3950 | 1 SODIMM + 4GB memory down | DP++/HDMI + VGA | 4 | 4 | 2 | 2 | 9~36V DC | Fanless | -40°C to 85°C |
| AL253-TN-20E30 | 770-AL2531-300G | x5-E3930 | 1 SODIMM + 2GB memory down | DP++/HDMI + VGA | 4 | 4 | 2 | 2 | 9~36V DC | Fanless | -40°C to 85°C |
| AL253-BN-40E40 | 770-AL2531-400G | x5-E3940 | 1 SODIMM + 4GB memory down | DP++/HDMI + VGA | 4 | 4 | 2 | 2 | 9~36V DC | Fanless | 0°C to 60°C |
| AL253-TN-40E40 | 770-AL2531-500G | x5-E3940 | 1 SODIMM + 4GB memory down | DP++/HDMI + VGA | 4 | 4 | 2 | 2 | 9~36V DC | Fanless | -40°C to 85°C |
| AL253-BN-20N00 | 770-AL2531-600G | N4200 | 1 SODIMM + 4GB memory down | DP++/HDMI + VGA | 4 | 4 | 2 | 2 | 9~36V DC | Fanless | 0°C to 60°C |

Packing List

| | |
|--|-----------------|
| • 1 AL253 board | |
| • 1 Heat sink for E series 0~60°C (Height: 29mm) | A71-008329-010G |
| for E series -40~85°C (Height: 39mm) | A71-008329-000G |
| for N series 0~60°C (Height: 29mm) | A71-008329-020G |
| • 1 Serial ATA data with power cable | A81-002008-000G |

Optional Items

| | |
|---|-----------------|
| • USB port cable (Length: 200mm) | A81-001032-016G |
| • COM port cable (Length: 250mm, 1 x COM ports) | 332-753040-000G |
| • Power adapter (60W, 12V) | 671-106012-000G |
| • Power adapter (120W, 19V) | 671-112009-100G |
| • Heat spreader for E series (Height: 11mm) | A71-808330-000G |
| for N series (Height: 11mm) | A71-808330-010G |

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