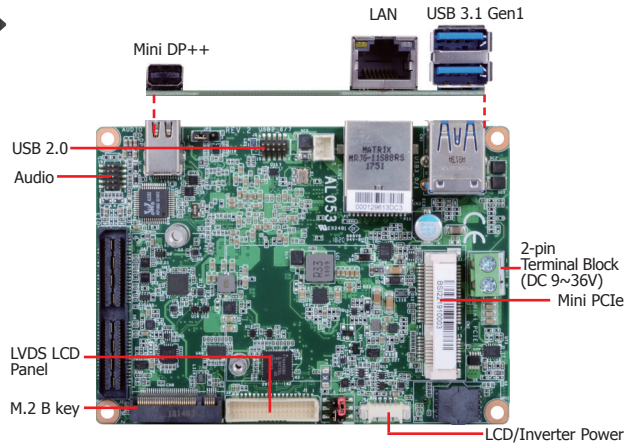


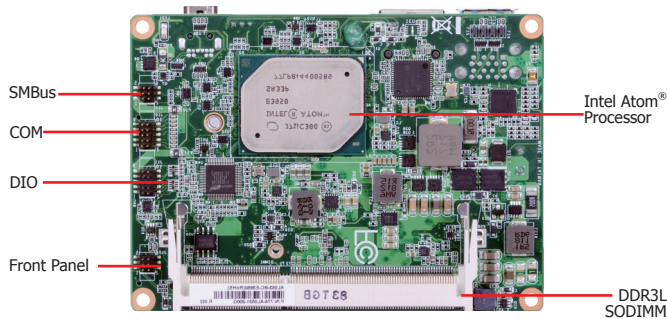


# AL053

Atom



Top View



Bottom View

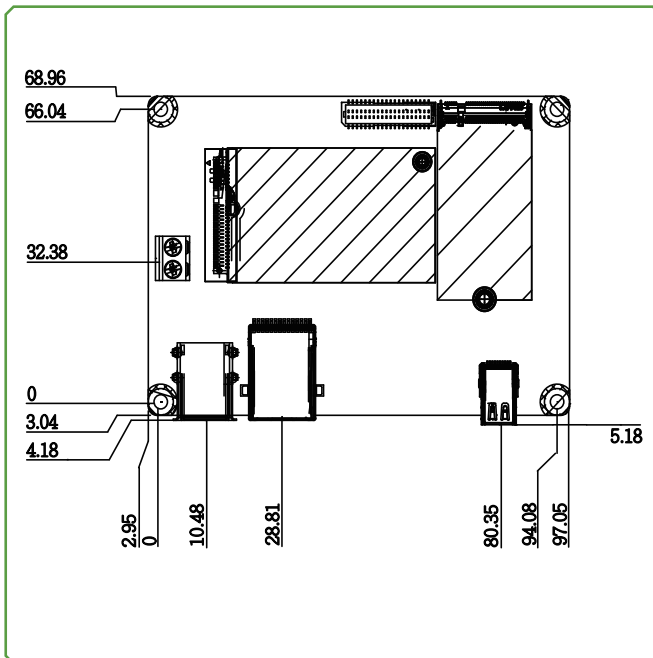
## Features

- Small form factor 2.5" Pico-ITX for space-limited applications
- 1 DDR3L SODIMM up to 8GB
- Two independent displays: LVDS + Mini DP++
- Expansion and Storage: 1 Mini PCIe, 1 M.2, 1 SMBus
- Rich I/O: 1 Intel GbE, 1 COM, 2 USB 3.1 Gen1, 2 USB 2.0

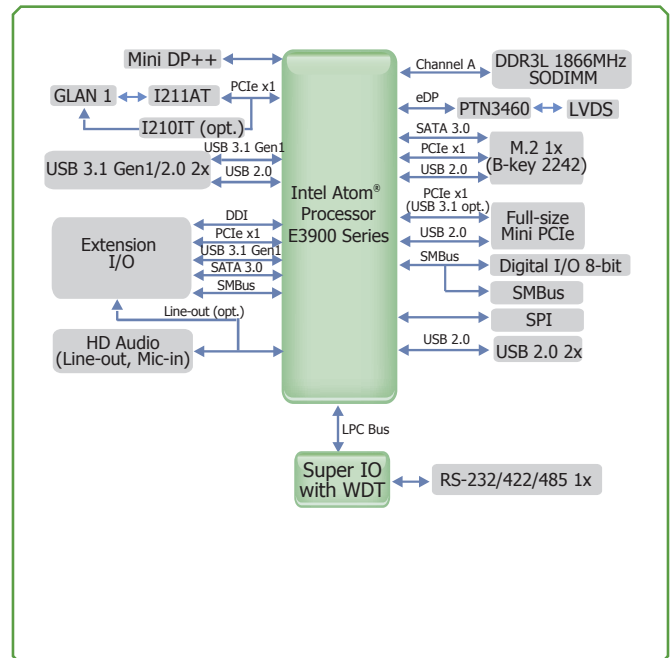
\* Populated by default



## Mechanical Drawing



## Block Diagram



## Specifications

<b>SYSTEM</b>	<b>Processor</b>	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), 6.5W Intel® Pentium® Processor N4200, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W Intel® Celeron® Processor N3350, Dual Core, 2M Cache, 1.1GHz (2.4GHz), 6W
	<b>Memory</b>	One 204-pin SODIMM up to 8GB Single Channel DDR3L 1866MHz
	<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 HW Decode: H.264, MPEG2, VC1, VP8, H.265, MPEG4 HW Encode: H.264, MPEG2, MPEG4
	<b>Display</b>	1 x Mini DP++ 1 x LVDS Mini DP++: resolution up to 4096x2160 @ 60Hz LVDS: dual channel 18/24-bit, resolution up to 1920x1200 @ 60Hz
<b>Dual Displays</b>	LVDS + Mini DP++	
<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 M.2 B key 2242 (PCIe/USB 2.0/SATA 3.0)
<b>AUDIO</b>	<b>Audio Codec</b>	Realtek ALC262-VC2-GR
<b>ETHERNET</b>	<b>Controller</b>	1 x Intel® I211AT PCIe (10/100/1000Mbps) 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>Display</b>	1 x LVDS LCD Panel Connector 1 x LCD/Inverter Power
	<b>Audio</b>	1 x Audio (Line-out/Mic-in)
	<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>	9~36V DC
	<b>Connector</b>	2-pin Terminal Block
	<b>RTC Battery</b>	CR2032 Coin Cell
	<b>Consumption</b>	Typical: E3950:12V @ 0.35A (4.20Watt) Max.: E3950:12V @ 1.90A (22.8Watt)
<b>OS SUPPORT (UEFI Only)</b>	<b>Microsoft/Linux</b>	Windows 10 IoT Enterprise (64-bit)      Ubuntu 16.04
<b>ENVIRONMENT</b>	<b>Temperature</b>	Operating: 0 to 60°C, -20 to 70°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>	715,458 hrs @ 25°C; 482,964 hrs @ 45°C ; 335,469 hrs @ 60°C
<b>MECHANICAL</b>	<b>Dimensions</b>	2.5" Pico-ITX Form Factor      100mm (3.94") x 72mm (2.83")
	<b>Height</b>	PCB: 1.6mm      Top Side: 15mm, Bottom Side: 8mm
<b>Certification</b>		CE, FCC, RoHS

## Ordering Information

Model Name	P/N	Processor	Memory	Display	GbE	RS-232/422/485	USB 3.1 Gen1	USB 2.0	Power	Thermal	Temp.
<b>AL053-BC-E3930</b>	770-AL0531-000G	X5-E3930	1 SODIMM	LVDS + Mini DP++	1	1	2	2	9~36V DC	Fanless	0 to 60°C
<b>AL053-BC-E3940</b>	770-AL0531-100G	X5-E3940	1 SODIMM	LVDS + Mini DP++	1	1	2	2	9~36V DC	Fanless	0 to 60°C
<b>AL053-BC-E3950</b>	770-AL0531-200G	X7-E3950	1 SODIMM	LVDS + Mini DP++	1	1	2	2	9~36V DC	Fanless	0 to 60°C
<b>AL053-BC-N3350</b>	770-AL0531-300G	N3350	1 SODIMM	LVDS + Mini DP++	1	1	2	2	9~36V DC	Fanless	0 to 60°C
<b>AL053-EC-E3930</b>	770-AL0531-400G	X5-E3930	1 SODIMM	LVDS + Mini DP++	1	1	2	2	9~36V DC	Fanless	-20 to 70°C
<b>AL053-TC-E3930</b>	770-AL0531-500G	X5-E3930	1 SODIMM	LVDS + Mini DP++	1	1	2	2	9~36V DC	Fanless	-40 to 85°C
<b>AL053-TC-E3950</b>	770-AL0531-900G	X7-E3950	1 SODIMM	LVDS + Mini DP++	1	1	2	2	9~36V DC	Fanless	-40 to 85°C

Note: N4200 is supported upon request with MOQ requirement.

## Packing List

• 1 AL053 board	
• 1 Heat spreader (Height: 11mm)	E Series CPU: A71-808308-000G N Series CPU: A71-808309-000G

## Optional Items

• USB port cable (Length: 200mm)	A81-001061-016G
• 1 COM port cable (Length: 300mm)	A81-015038-016G
• Power adapter (60W, 12V, DC Jack)	671-106012-000G
• 2 pole terminal to DC Jack cable	A81-004013-000G
• 1 Audio cable (Length: 160mm)	A81-022013-016G
• Heat sink for E series CPU 0 to 60°C/wide temp (Height: 22.6mm)	A71-008111-010G
• Heat sink for N series CPU 0 to 60°C (Height: 19mm)	A71-008108-010G