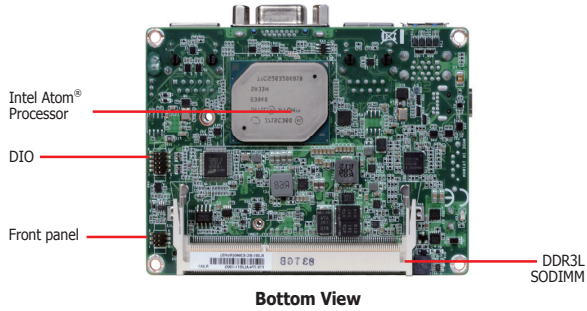
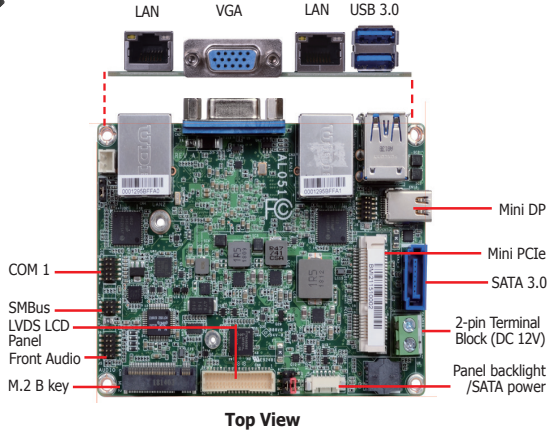




Intel Atom®/Pentium®/Celeron® Processor E3900 Series
2.5" Pico-ITX



AL051



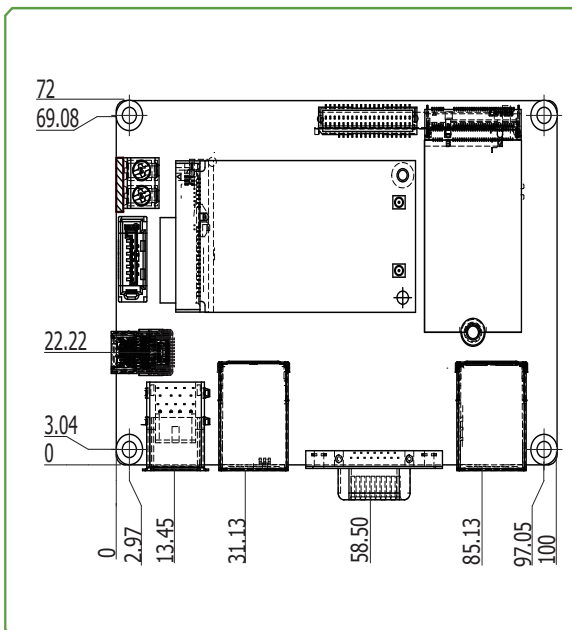
Features

- **Small form factor 2.5" Pico-ITX for space-limited applications**
- **1 DDR3L SODIMM up to 8GB**
- **Triple independent displays: VGA + Mini DP++ + LVDS**
- **Expansion and Storage: 1 Mini PCIe, 1 M.2, 1 SMBus**
- **Rich I/O: 2 Intel GbE, 1 COM, 2 USB 3.0, 2 USB 2.0**

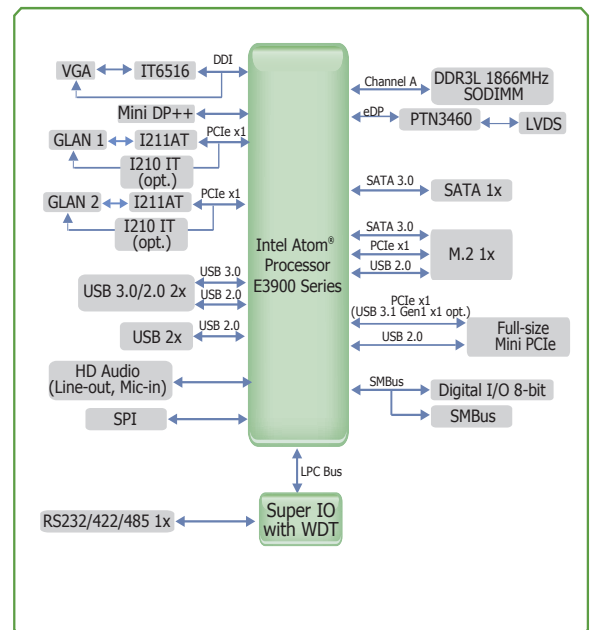
* Populated by default



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® Processor N4200, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W Intel® Celeron® Processor N3350, Dual Core, 2M Cache, 1.1GHz (2.4GHz), 6W
	Memory	One 204-pin SODIMM up to 8GB Single Channel DDR3L 1866MHz
	BIOS	Insyde SPI 64Mbit (supports UEFI boot only)
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 Mini DP++ 1 x VGA 1 x LVDS Mini DP++: resolution up to 4096x2160 @ 60Hz VGA: resolution up to 1920x1200 @ 60Hz LVDS: dual channel 18/24-bit, resolution up to 1920x1200 @ 60Hz
	Triple Displays	VGA + Mini DP++ + LVDS
EXPANSION	Interface	1 x Full-size Mini PCIe (PCIe/USB 2.0) 1 x M.2 B key 2242. (PCIe/USB 2.0/SATA 3.0)
AUDIO	Audio Codec	Realtek ALC262-VC2-GR
ETHERNET	Controller	2 x Intel® I211AT PCIe (10/100/1000Mbps) 2 x Intel® I210IT PCIe (10/100/1000Mbps) (available upon request)
REAR I/O	Ethernet	2 x GbE (RJ-45)
	USB	2 x USB 3.0
	Display	1 x Mini DP++ 1 x VGA 1 x LVDS
INTERNAL I/O	Serial	1 x RS-232/422/485 (1.27mm pitch, right angle type)
	USB	2 x USB 2.0 (1.27mm pitch)
	Display	1 x LVDS LCD Panel Connector
	Audio	1 x Audio (Line-out/Mic-in)
	SATA	1 x SATA 3.0 (up to 6Gb/s)
	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	fTPM2.0
POWER	Type	Single 12V +/-10% DC
	Connector	2-pin Terminal Block 2-pin Vertical Type Connector (opt.)
	RTC Battery	CR2032 Coin Cell
OS SUPPORT (UEFI Only)	Microsoft/Linux	Windows 10 IoT Enterprise (64-bit) Ubuntu 16.04
ENVIRONMENT	Temperature	Operating: 0 to 60°C, Option: -20 to 70°C/-40 to 85°C Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH Storage: 5 to 90% RH
MECHANICAL	Dimensions	2.5" Pico-ITX Form Factor 100mm (3.94") x 72mm (2.83")
	Height	PCB: 1.6mm Top Side: 15mm, Bottom Side: 8mm
CERTIFICATIONS		CE, FCC, RoHS

Ordering Information

Model Name	P/N	Processor	Memory	Display	GbE	RS-232/422/485	USB 3.0	USB 2.0	Power	Thermal	Temp.
AL051-BC-E3930	770-AL0511-000G	X5-E3930	1 SODIMM	VGA + LVDS + Mini DP++	2	1	2	2	12VDC	Fanless	0 to 60°C
AL051-BC-E3940	770-AL0511-100G	X5-E3940	1 SODIMM	VGA + LVDS + Mini DP++	2	1	2	2	12VDC	Fanless	0 to 60°C
AL051-BC-E3950	770-AL0511-200G	X7-E3950	1 SODIMM	VGA + LVDS + Mini DP++	2	1	2	2	12VDC	Fanless	0 to 60°C
AL051-BC-N3350	770-AL0511-300G	N3350	1 SODIMM	VGA + LVDS + Mini DP++	2	1	2	2	12VDC	Fanless	0 to 60°C
AL051-EC-E3930	770-AL0511-400G	X5-E3930	1 SODIMM	VGA + LVDS + Mini DP++	2	1	2	2	12VDC	Fanless	-20 to 70°C
AL051-TC-E3930	770-AL0511-500G	X5-E3930	1 SODIMM	VGA + LVDS + Mini DP++	2	1	2	2	12VDC	Fanless	-40 to 85°C

Note: N4200 is supported upon request with MOQ requirement.

Packing List

• 1 AL051 board	
• 1 Serial ATA data cable (Length: 500mm)	332-553002-005G
• 1 Y cable for SATA and inverter power (Length: 155mm)	A81-020016-018G
• 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
• Heat sink for 0 to 60°C (Height: 19mm)	E Series CPU: A71-008107-000G N Series CPU: A71-008108-000G
• 1 Audio cable (Length: 160mm)	A81-022013-016G
• Heat sink for up to 70/85°C / E Series CPU (Height: 23mm)	A71-008111-000G

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