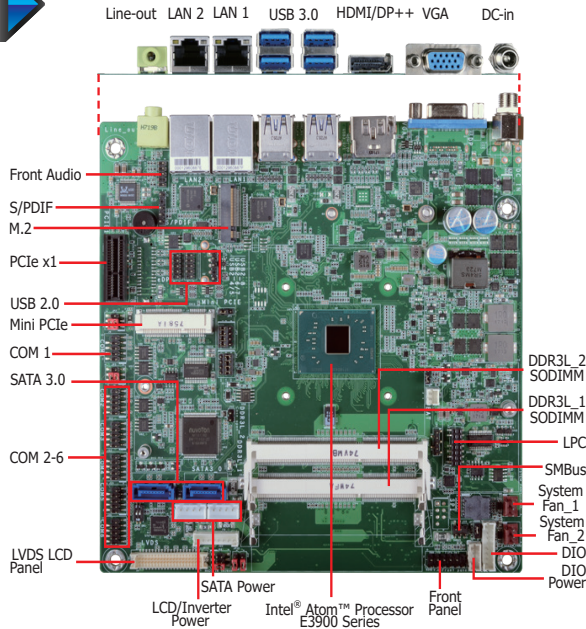




**Intel® Atom™ Processor E3900 Series
Mini-ITX**



AL171/AL173



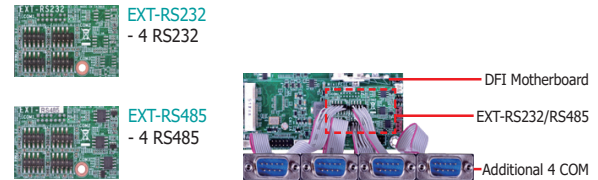
* The photos above refer to AL173.

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



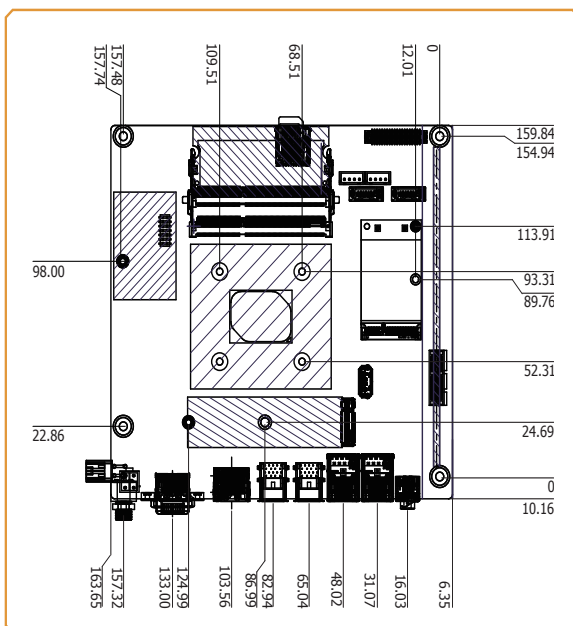
2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



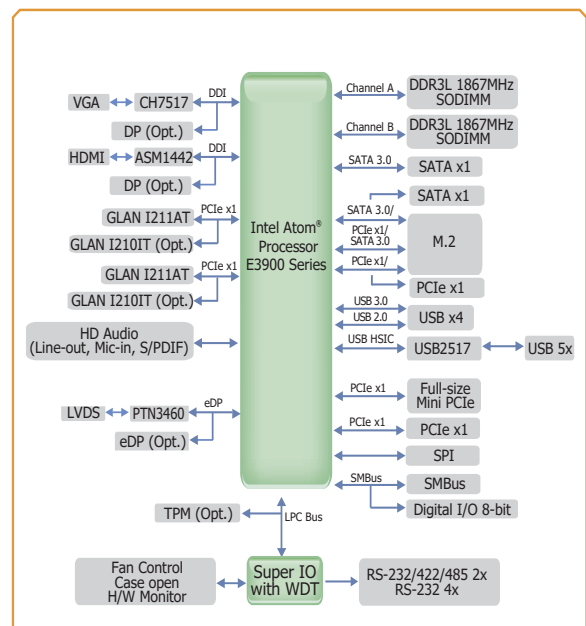
Ordering Information

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	170mm (6.7") x 170mm (6.7")
	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

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