Intel® Atom™ Processor E3900 Series Mini-ITX

Atom

AL171/AL173

* The photos above refer to AL173.

Features

- 2 DDR3L 1867MHz SODIMM up to 8GB
- Three independent displays: (VGA/DP++) + (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)

DFI's Proprietary Technology

EXT-RS232
- 4 RS232

EXT-RS485
- 4 RS485

Ordering Information

Model Name	P/N	Processor	Memory	VGA/ DP++	DP++	LVDS/ eDP	RS-232/422/485	RS-232	USB 3.0	USB 2.0	Power	Thermal	Temp.
AL171-CB-N4200	770-AL1713-000G	N4200	2 SODIMM	VGA	1	LVDS	2	4	4	5	12V DC	Fanless	0 to 60°C
AL171-CT-E3930	770-AL1713-100G	E3930	2 SODIMM	VGA	1	LVDS	2	4	4	5	12V DC	Fanless	-40 to 85°C
AL171-CB-E3950	770-AL1713-300G	E3950	2 SODIMM	VGA	1	LVDS	2	4	4	5	12V DC	Fanless	0 to 60°C
AL171-CT-E3950	770-AL1713-800G	E3950	2 SODIMM	VGA	1	LVDS	2	4	4	5	12V DC	Fanless	-40 to 85°C
AL173-CB-N4200	770-AL1733-000G	N4200	2 SODIMM	VGA	1	LVDS	2	4	4	5	15-36V DC	Fanless	0 to 60°C
AL173-CT-E3930	770-AL1733-100G	E3930	2 SODIMM	VGA	1	LVDS	2	4	4	5	15-36V DC	Fanless	-40 to 85°C
AL173-CT-E3950	770-AL1733-800G	E3950	2 SODIMM	VGA	1	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 DP++ 1 x LVDS/eDP	VGA: resolution up to 1920x1200 @ 60Hz LVDS: dual channel 48-bit, resolution up to 1920x1200 @ 60Hz DP++: resolution up to 4096x2160 @ 60Hz eDP: resolution up to 3840x2160 @ 60Hz
	Triple Displays	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 ALC888S-VD2-GR	
ETHERNET	**Controller**	-40~85°C: 2 x Intel® I211IT/I210IT PCIe (10/100/1000Mbps) or 0-60°C: 2 x Intel® I211AT/I210AT PCIe (10/100/1000Mbps)	
REAR I/O	**Ethernet**	2 x GbE (RJ-45)	
	USB	4 x USB 3.0	
	Display	1 x 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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