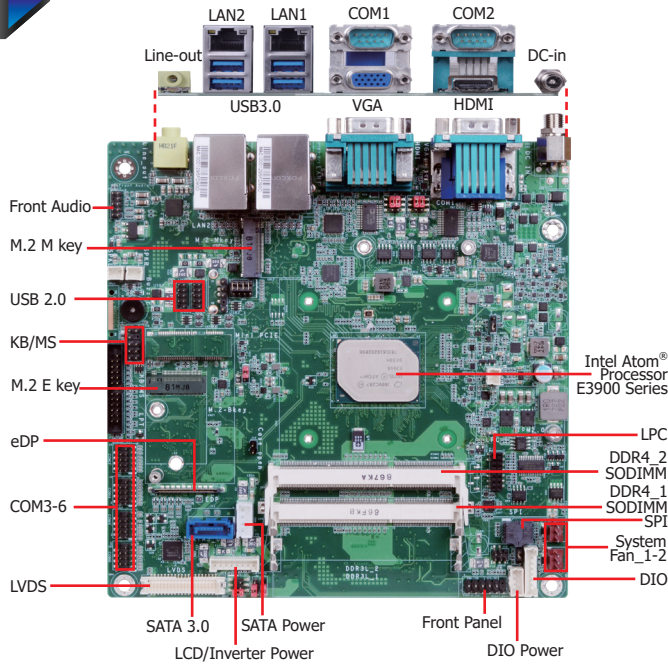


AL102

Atom

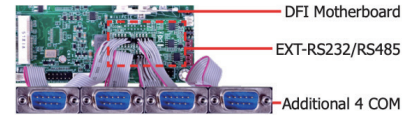


Features

- 2 DDR3L 1867MHz SODIMM up to 8GB
- Three independent displays: VGA + HDMI + LVDS
- HDMI: resolution up to 3840x2160@30Hz
- Multiple expansion: 1 M.2 M Key, 1 M.2 E Key, 1 Full-Sized
- Rich I/O: 2 Giga LAN, 6 COM, 4 USB 3.0, 5 USB 2.0



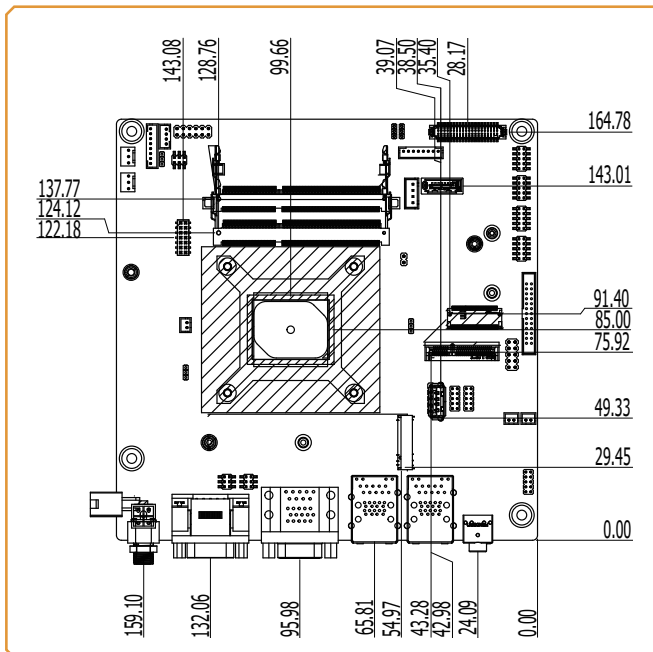
2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



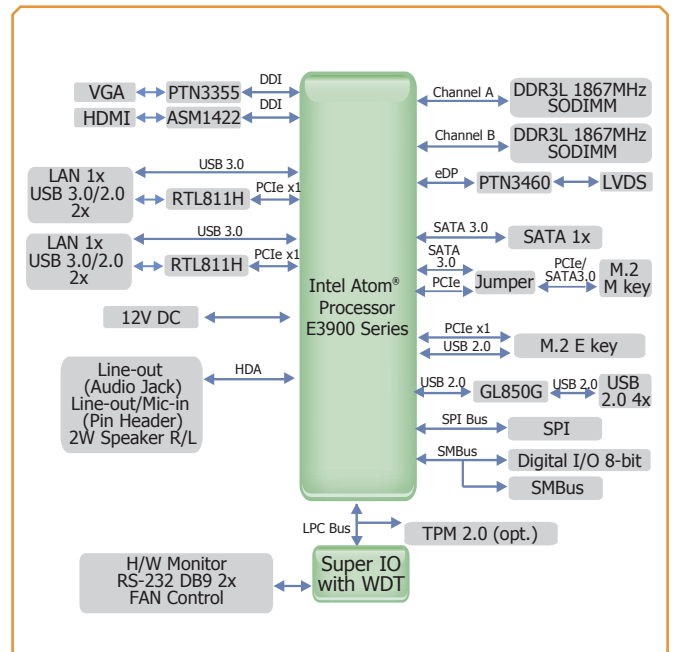
Ordering Information

Model Name	P/N	Processor	Memory	LAN	Display	RS-232	USB 3.0	USB 2.0	Power	Thermal	TPM
AL102-DC-E3950	770-AL1021-000G	x7-E3950	2 SODIMM	2	VGA+HDMI+LVDS	2	4	5	12 VDC	Cooler	opt.
AL102-DC-E3940	770-AL1021-100G	x5-E3940	2 SODIMM	2	VGA+HDMI+LVDS	2	4	5	12 VDC	Cooler	opt.
AL102-DC-N3350	770-AL1021-200G	N3350	2 SODIMM	2	VGA+HDMI+LVDS	2	4	5	12 VDC	Fanless	opt.
AL102-DC-N4200	770-AL1021-300G	N4200	2 SODIMM	2	VGA+HDMI+LVDS	2	4	5	12 VDC	Fanless	opt.

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® 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	Two 204-pin SODIMM up to 8GB	Dual Channel DDR3L 1867MHz	
	BIOS	Insyde SPI 128Mbit		
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 1 x HDMI 1 x LVDS/eDP (opt.)	VGA: resolution up to 1920x1080 @ 60Hz HDMI: resolution up to 3840x2160@30Hz LVDS: dual channel 48-bit, resolution up to 1920x1200 @ 60Hz eDP: resolution up to 3840x2160 @ 60Hz	
	Triple Displays	VGA + HDMI + LVDS VGA + HDMI + eDP (opt.)		
EXPANSION	Interface	1 x M.2 M key (support 2242/2280) (PCIe/SATA3.0) 1 x M.2 E key (support 2230) (PCIe/USB2.0) 1 x Full-size Mini PCIe (PCIe2.0/USB2.0) (opt.)		
AUDIO	Audio Codec	Realtek ALC269Q		
ETHERNET	Controller	2 x Realtek RTL8111H-CG		
REAR I/O	Ethernet	2 x GbE (RJ-45)		
	USB	4 x USB 3.0		
	Display	1 x VGA	1 x HDMI	
	Audio	1 x Line-out		
	Serial	2 x RS-232/RS422/485 (RS422/485 opt.) (DB-9)		
	INTERNAL I/O	Serial	4 x RS-232 (2.0mm pitch) (opt.)	
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 (opt.)		
Display		1 x LVDS LCD Panel Connector 1 x LCD/Inverter Power 1 x eDP LCD Panel Connector (opt.)		
Audio		1 x Audio (Line-out/Mic-in)		
SATA		1x 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	TPM 2.0 (opt.)	
POWER	Type	Single 12V +/-10% DC		
	Connector	DC-in Jack Right Angle Connector (4-pin) (opt.) Vertical Type Connector (4-pin) (opt.)		
	Consumption	Idle: E3950 12W: 12V @ 0.68A (8.16W) Max: i7-7700 65W: 12V @ 2.46A (29.52W)		
	RTC Battery	CR2032 Coin Cell		
OS SUPPORT	Microsoft	Windows 10 64bits (LTSB)		
ENVIRONMENT	Temperature	Operating: 0 to 50°C	Storage: -30 to 60°C	
	Humidity	Operating: 5 to 90% RH	Storage: 5 to 90% RH	
	MTBF	AL102: 339,273 hrs @ 25°C; 143,701 hrs @ 45°C ; 62,123 hrs @ 60°C Calculation model: Telcordia Issue 4 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: 40mm, Bottom Side: 3.3mm	
CERTIFICATION	CE, FCC, RoHS			

► Packing List

• 1 AL102 motherboard	
• 1 Serial ATA data with power cable (Length: 300mm)	A81-002013-000G

► Optional Items

• COM port cable (Length: 250mm, 1 x COM ports)	A81-015011-001G
• USB port cable (Length: 200mm)	A81-001032-016G
• I/O shield	A49-AL1020-000G