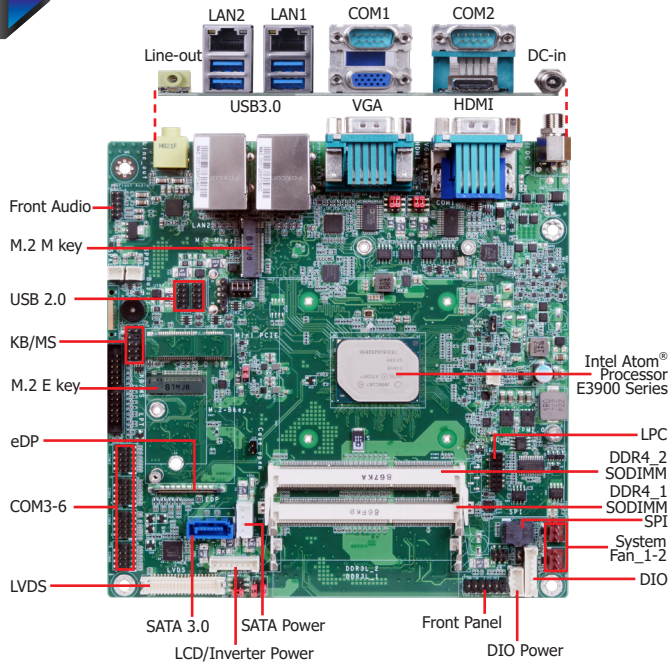


## AL102

Atom

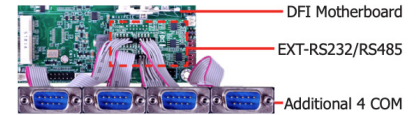
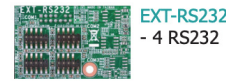


### Features

- 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



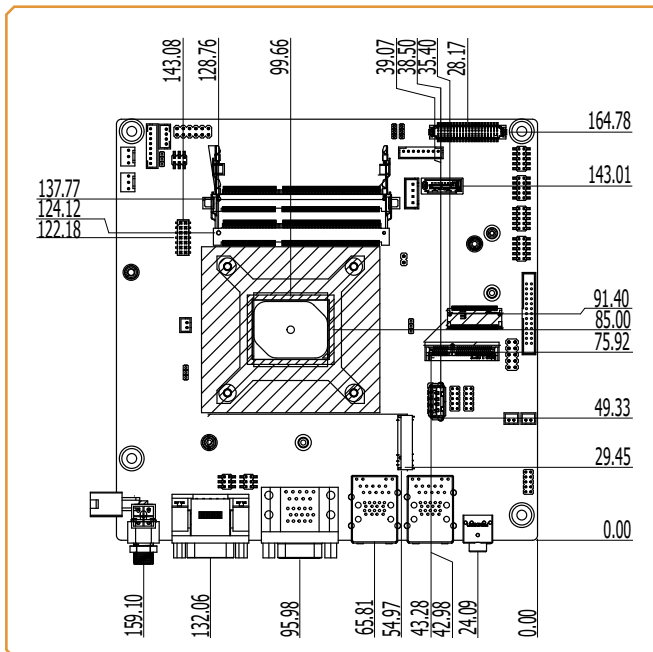
### 2 Extension Modules for Additional 4 COM Ports (via the LPC connector)



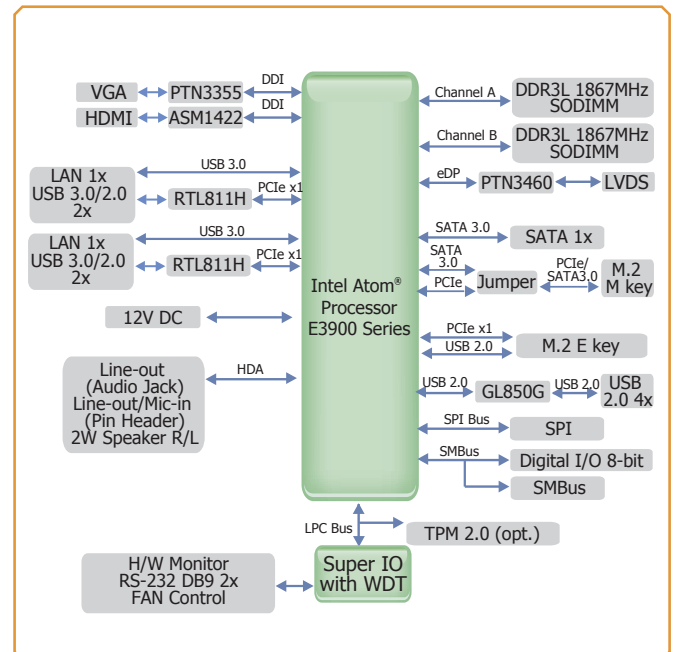
### Ordering Information

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

<b>SYSTEM</b>	<b>Processor</b>	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		
	<b>Memory</b>	Two 204-pin SODIMM up to 8GB	Dual Channel DDR3L 1867MHz	
	<b>BIOS</b>	Insyde SPI 128Mbit		
<b>GRAPHICS</b>	<b>Controller</b>	Intel® HD Graphics GT Series		
	<b>Feature</b>	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		
	<b>Display</b>	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	
	<b>Triple Displays</b>	VGA + HDMI + LVDS VGA + HDMI + eDP (opt.)		
<b>EXPANSION</b>	<b>Interface</b>	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.)		
<b>AUDIO</b>	<b>Audio Codec</b>	Realtek ALC269Q		
<b>ETHERNET</b>	<b>Controller</b>	2 x Realtek RTL8111H-CG		
<b>REAR I/O</b>	<b>Ethernet</b>	2 x GbE (RJ-45)		
	<b>USB</b>	4 x USB 3.0		
	<b>Display</b>	1 x VGA	1 x HDMI	
	<b>Audio</b>	1 x Line-out		
	<b>Serial</b>	2 x RS-232/RS422/485 (RS422/485 opt.) (DB-9)		
	<b>INTERNAL I/O</b>	<b>Serial</b>	4 x RS-232 (2.0mm pitch) (opt.)	
<b>USB</b>		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.)		
<b>Display</b>		1 x LVDS LCD Panel Connector 1 x LCD/Inverter Power 1 x eDP LCD Panel Connector (opt.)		
<b>Audio</b>		1 x Audio (Line-out/Mic-in)		
<b>SATA</b>		1x SATA 3.0 (up to 6Gb/s)		
<b>DIO</b>		1 x 8-bit DIO		
<b>LPC</b>		1 x LPC (supports LPC EXT-RS232/RS485 module)		
<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>	TPM 2.0 (opt.)	
<b>POWER</b>	<b>Type</b>	Single 12V +/-10% DC		
	<b>Connector</b>	DC-in Jack Right Angle Connector (4-pin) (opt.) Vertical Type Connector (4-pin) (opt.)		
	<b>Consumption</b>	Idle: E3950 12W: 12V @ 0.68A (8.16W) Max: E3950 12W: 12V @ 2.46A (29.52W)		
	<b>RTC Battery</b>	CR2032 Coin Cell		
<b>OS SUPPORT</b>	<b>Microsoft</b>	Windows 10 64bits (LTSB)		
<b>ENVIRONMENT</b>	<b>Temperature</b>	Operating: 0 to 50°C	Storage: -30 to 60°C	
	<b>Humidity</b>	Operating: 5 to 90% RH	Storage: 5 to 90% RH	
	<b>MTBF</b>	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		
<b>MECHANICAL</b>	<b>Dimensions</b>	Mini-ITX Form Factor	170mm (6.7") x 170mm (6.7")	
	<b>Height</b>	PCB: 1.6mm	Top Side: 40mm, Bottom Side: 3.3mm	
<b>CERTIFICATION</b>	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