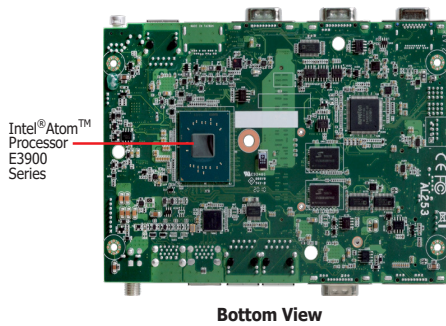
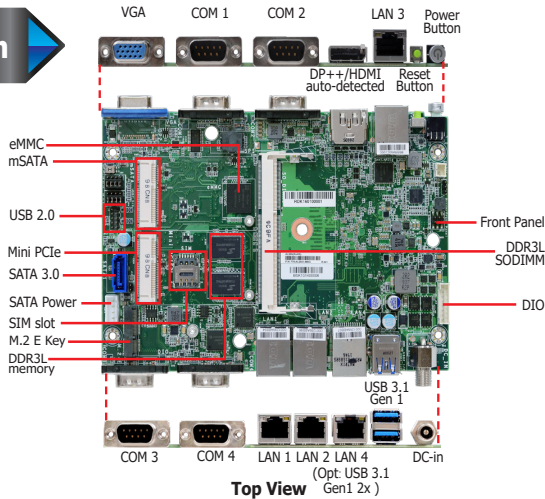




**Intel Atom® Processor E3900 Series
4" SBC**



AL253



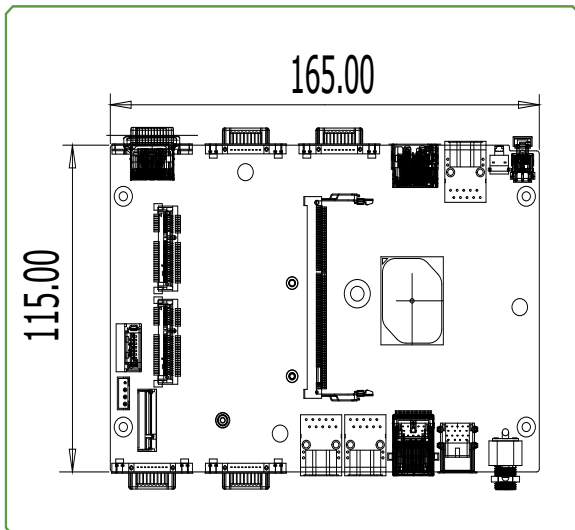
Features

- **2GB/4GB/8GB Memory onboard + one 204-pin SO-DIMM**
Dual Channel DDR3L 1866MHz
The system supports a combined maximum memory size of **8GB total**
- **Two independent displays:**
DP++/HDMI (auto-detection) + VGA/DP(Opt.)
- **DP resolution up to 4096x2160 @ 60Hz**
- **Multiple OS support: Win 7/Win 10/Linux**
- **Rich I/O: max. 4 Intel GbE, 4 COM, 4 USB 3.1 Gen 1, 2 USB 2.0**

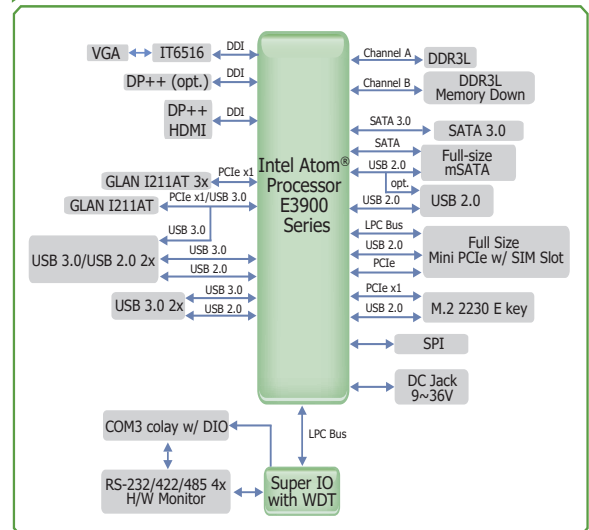
* Populated by default



Mechanical Drawing



Block Diagram





Specifications

SYSTEM	Processor	Intel Atom® Processor E3900 Series, 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), 6W Intel® Pentium® Processor N4200, Quad Core, 2M Cache, 1.1GHz (2.5GHz), 6W	
	Memory	2GB/4GB/8GB Memory onboard + one 204-pin SO-DIMM Dual Channel DDR3L 1866MHz The system supports a combined maximum memory size of 8GB total	
	BIOS	AMI SPI 128Mbit (support UEFI/legacy mode)	
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 DP++/HDMI (auto-detection) 1 x VGA/DP(opt.)	DP: resolution up to 4096x2160 @ 60Hz HDMI: resolution up to 3840x2160 @ 30Hz VGA: resolution up to 1920x1200 @ 60Hz
Dual Displays	DP++/HDMI + VGA/DP(opt.)		
STORAGE	eMMC	1 x 8G/16G/32G/64G (opt.)	
EXPANSION	Interface	1 x Full-size mSATA (SATA, USB is available by BOM option) 1 x Full-size Mini PCIe (USB2.0/LPC/PCIe, PCIe is available for config. with 4 LAN) 1 x M.2 (2230 E Key) (PCIe/USB2.0)	
	ETHERNET	Controller 4 x Intel® I211AT PCIe, co-lay with I210IT (10/100/1000Mbps)	
REAR I/O	Ethernet	up to 4 x GbE (RJ-45) (1 x GbE colay 2 x USB 3.1 Gen1)	
	Serial	4 x RS-232/422/485 (1 x RS-232/422/485 colay 1 x 8-bit DIO by jumper setting)	
	USB	up to 4 x USB 3.1 Gen1 (2 x USB 3.1 Gen1 colay 1 x GbE)	
	Display	1 x DP++/HDMI (auto-detection) 1 x VGA/DP(opt.)	
INTERNAL I/O	USB	2 x USB 2.0 (2.0mm pitch)	
	SATA	1 x SATA 3.0 (up to 6Gb/s, support SSD only)	1 x SATA Power
	DIO	1 x 8-bit DIO	
	Other I/O	1 x Front Panel	
WATCHDOG TIMER	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds	
SECURITY	TPM	fTPM2.0	
POWER	Type	9~36V DC input	
	Connector	DC Jack	
	Consumption	Typical: E3950:12V, 5.88Watt Max.: E3950:12V, 18.84Watt	
	RTC Battery	CR2032 Coin Cell, link main board with cable	
OS SUPPORT	Microsoft/Linux	Windows 10 IoT Enterprise 64-bit Windows 7 (WES7) 32/64-bit (project support only)	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	4305UE: 619,529 hrs @ 25°C; 407,983 hrs @ 45°C ; 281,090 hrs @ 60°C; 142,546 hrs @ 85°C Calculation model: Telcordia Issue 4 Environment: GB, GC – Ground Benign, Controlled	
MECHANICAL	Dimensions	4" SBC Form Factor 165mm (6.49") x 115mm (4.53")	
	Height	PCB's thickness: 1.6mm Top Side (CPU side): 6.1mm, Bottom Side: 16.4mm	
STANDARD AND CERTIFICATIONS	Certifications	CE, FCC, RoHS, UKCA	

Ordering Information

Model Name	P/N	Processor	Memory	Display	GbE	RS232 /422/485	USB 3.1 Gen 1	USB 2.0	Power	Thermal	Temperature
AL253-BN-40E50	770-AL2531-000G	x7-E3950	1 SODIMM + 4GB memory down	DP++/HDMI + VGA	4	4	2	2	9~36V DC	Fanless	0°C to 60°C
AL253-BN-20E30	770-AL2531-100G	x5-E3930	1 SODIMM + 2GB memory down	DP++/HDMI + VGA	4	4	2	2	9~36V DC	Fanless	0°C to 60°C
AL253-TN-40E50	770-AL2531-200G	x7-E3950	1 SODIMM + 4GB memory down	DP++/HDMI + VGA	4	4	2	2	9~36V DC	Fanless	-40°C to 85°C
AL253-TN-20E30	770-AL2531-300G	x5-E3930	1 SODIMM + 2GB memory down	DP++/HDMI + VGA	4	4	2	2	9~36V DC	Fanless	-40°C to 85°C
AL253-BN-40E40	770-AL2531-400G	x5-E3940	1 SODIMM + 4GB memory down	DP++/HDMI + VGA	4	4	2	2	9~36V DC	Fanless	0°C to 60°C
AL253-TN-40E40	770-AL2531-500G	x5-E3940	1 SODIMM + 4GB memory down	DP++/HDMI + VGA	4	4	2	2	9~36V DC	Fanless	-40°C to 85°C
AL253-BN-20N00	770-AL2531-600G	N4200	1 SODIMM + 4GB memory down	DP++/HDMI + VGA	4	4	2	2	9~36V DC	Fanless	0°C to 60°C

Packing List

• 1 AL253 board	
• 1 Heat sink for E series 0~60°C (Height: 29mm)	A71-008329-010G
for E series -40~85°C (Height: 39mm)	A71-008329-000G
for N series 0~60°C (Height: 29mm)	A71-008329-020G
• 1 Serial ATA data with power cable	A81-002008-000G

Optional Items

• USB port cable (Length: 200mm)	A81-001032-016G
• COM port cable (Length: 250mm, 1 x COM ports)	332-753040-000G
• Power adapter (60W, 12V)	671-106012-000G
• Power adapter (120W, 19V)	671-112009-100G
• Heat spreader for E series (Height: 11mm)	A71-808330-000G
for N series (Height: 11mm)	A71-808330-010G

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US

sales@assured-systems.com

Sales: +1 347 719 4508
Support: +1 347 719 4508

1309 Coffeen Ave
Ste 1200
Sheridan
WY 82801
USA

EMEA

sales@assured-systems.com

Sales: +44 (0)1785 879 050
Support: +44 (0)1785 879 050

Unit A5 Douglas Park
Stone Business Park
Stone
ST15 0YJ
United Kingdom

VAT Number: 120 9546 28
Business Registration Number: 07699660