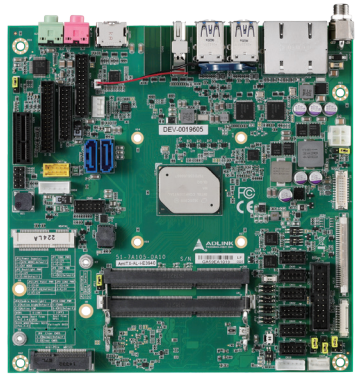
AmITX-AL-I

Thin Mini-ITX Embedded board with Intel Atom® E3900 Series, Pentium®, and Celeron® SoC

Features

- Low-profile Thin Mini-ITX Embedded board
- Intel® VT-x/VT-d supported
- Up to 16GB non-ECC DDR3L memory at 1866/1600MHz in dual stacked SODIMM socket
- Intel® Gen9 Low Power graphics, up to 4k resolution and H.265 codec
- DisplayPort, HDMI, dual channel 18/24-bit LVDS (eDP by build option), supports three independent displays
- Supports Smart Embedded Management Agent (SEMA®) functions
- Extreme Rugged operating temperature: -40°C to +85°C (build option for selected SKUs)



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Specifications

Processor & System

CPU

Intel Atom®/Pentium®/Celeron® SoC on 14nm process
Atom® x7-E3950 1.6/2.0GHz (Burst Frequency), 12W (4C/1866)
Atom® x5-E3940 1.6/1.8GHz (Burst Frequency), 9.5W (4C/1866)
Atom® x5-E3930 1.3/1.8GHz (Burst Frequency), 6.5W (2C/1866)
Pentium® N4200 1.1/2.5GHz (Burst Frequency), 6W (4C/1866)
Celeron® N3350 1.1/2.4GHz (Burst Frequency), 6W (2C/1866)
Supports: Intel® VT, Intel® VT-d, Intel® TXT, Intel® 64 Architecture, IA 32-bit, Intel® AES-NI, dual or quad Out-of-Order Execution (OOE) processor cores, PCLMULQDQ Instruction DRNG

BIOS

AMI EFI in 16MB SPI BIOS

Debug Interface

40-pin multipurpose flat cable connector for use in combination with DB-40 debug module to provide BIOS POST code display, BMC access, SPI BIOS flashing, Power Testpoints, Debug LEDs

Memory

Dual channel non-ECC 1866/1600 MHz DDR3L memory up to 16GB in dual stacked SODIMM sockets

SEMA® Support

Supports: Voltage/Current monitoring, Power sequence debug support, AT/ATX mode control, Logistics and Forensic information, Flat Panel Control, General Purpose I^2C, Failsafe BIOS (dual BIOS), Watchdog Timer and Fan Control

I/O Interfaces

Expansion Slots

1x PCIe x1 slot
1x Mini PCIe (full size) with USB
1x mSATA (full size)
SIM card slot (build option)
microSD card slot (build option)

Serial ATA

2x SATA 6 Gbps ports (one shared with mSATA)

USB

4x USB 3.0 on rear I/O
1x USB 2.0 on front panel header
2x USB 2.0 on standard header
1x USB 2.0 on Mini PCIe

KB/MS

1x PS/2 internal header

Serial Ports

2x RS-232/422/485 via onboard headers (5V/12V support)
4x RS-232 via onboard headers

Digital IO

10x GPIO on internal feature connector

TPM

TPM header (supports TPM 2.0)

Specifications

Audio

Audio Codec

Realtek® ALC888S

Interfaces

Line-out, Mic-in on rear I/O

7.1 channel signals and S/PDIF output on internal header

Display

Graphics Core

Intel® Generation 9 Low Power Graphics Core Architecture supporting 3 independent and simultaneous display combinations of DisplayPort, HDMI, LVDS or eDP outputs

Hardware encode/transcode (including HEVC)

DirectX 12, DirectX 11.3, DirectX 10, DirectX 9.3 support

OpenGL 4.3 and ES 3.0 support

OpenCL 2.0 support

Triple display: DP + HDMI + LVDS (default)

DisplayPort

1x DisplayPort (2x DisplayPort is build option, one is in place of HDMI), resolution up to 4096x2160@24Hz

HDMI

1x HDMI (co-lay with DP), resolution up to 3840×2160@30 Hz

LVDS

Single/Dual channel 18/24-bit (build option, in place of eDP), resolution up to 1900x1200@ 60 Hz.

eDP

4 lane support (build option, in place of LVDS)

Ethernet

Controller: 2x Intel® Ethernet controller i211 (MAC/PHY)

Note: Intel® Ethernet i210 (build option) is supported for -40°C to +85°C SKU

Interface: 10/100/1000 GbE connection

Wake-on-LAN: Yes

Power

Standard Input: 12V ±5% from internal 4-pin power connector or external DC jack

Peripherals Output: Onboard headers for fan and SATA power

Mechanical and Environmental

Form Factor: Thin Mini-ITX

Dimensions: 170 mm x 170 mm (L x W)

Operating Temp.

Standard Operating Temperature: 0°C to 60°C

Extreme Rugged Operating Temperature: -40°C + 85°C (build option for selected SKUs)

Shock and Vibration

MIL-STD-202G Method 214A, Table 214-I Condition D.

MIL-STD-202G Method 213B, Table 213-I Condition A.

Relative Humidity

10% to 90%, non-condensing

Certification

CE, FCC, Class B

Operating Systems

Standard Support

Windows 10 64-bit, Linux 64-bit

Extended Support (BSP)

Linux 64-bit, VxWorks 64-bit (TBD)

Intelligent Middleware

SEMA®

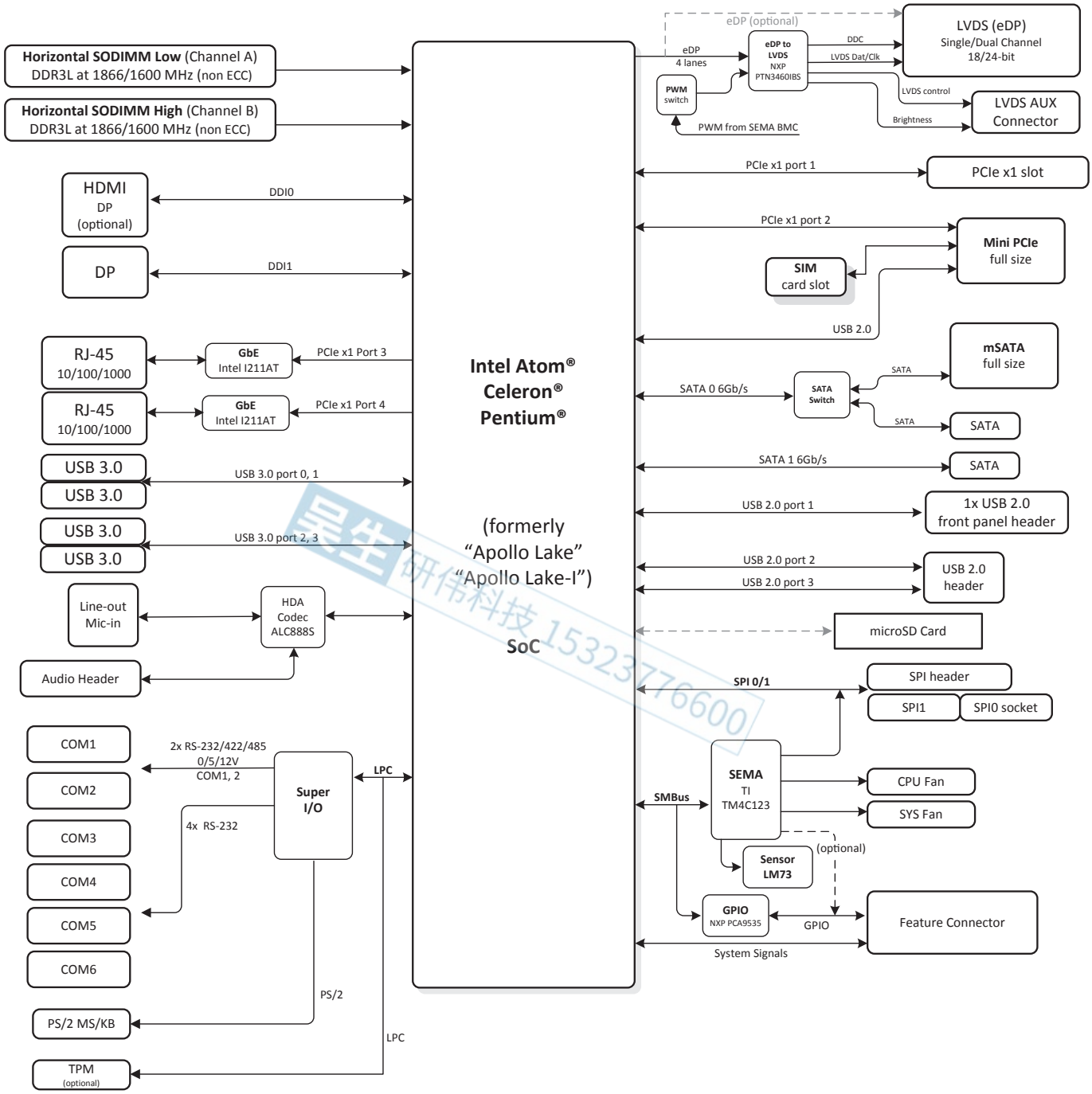
Local management, control of embedded computer systems

Extended EAPI for monitoring, control and analytics applications

Multiple OS support across platforms (x86, ARM)

Note: "build option" indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product. Be aware that these "build option" part numbers will need to be newly created and this will result in production lead times.

Functional Diagram



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AmITX-AL-I

Ordering Information

- **AmITX-AL-I-E3950**
  Thin Mini-ITX motherboard with Intel Atom® x7-E3950 1.6/2.0GHz (Burst Frequency), 12W (4C/1866)
- **AmITX-AL-I-E3940**
  Thin Mini-ITX motherboard with Intel Atom® x5-E3940 1.6/1.8GHz (Burst Frequency), 9.5W (4C/1866)
- **AmITX-AL-I-E3930**
  Thin Mini-ITX motherboard with Intel Atom® x5-E3930 1.3/1.8GHz (Burst Frequency), 6.5W (2C/1866)
- **AmITX-AL-I-N4200**
  Thin Mini-ITX motherboard with Intel® Pentium® N4200 1.1/2.5GHz (Burst Frequency), 6W (4C/1866)
- **AmITX-AL-I-N3350**
  Thin Mini-ITX motherboard with Intel® Celeron® N3350 1.1/2.4GHz (Burst Frequency), 6W (2C/1866)

Packing List

- **30-20875-0000**
  SATA dual power cable
- **30-10057-0600**
  SATA cable

Optional Accessories

- **30-20876-0000**
  COM port cable (1 port, 25cm)
- **30-20873-0000**
  PS/2 KB/MS cable (40cm)
- **30-20874-1000**
  USB 2.0 cable (2 ports, 20cm)
- **32-40345-1000**
  Heat sink for Intel Atom® E3900 Series, Extreme Rugged operating temperature
- **32-40346-1000**
  Heat sink for Intel Atom® E3900 Series, Standard operating temperature
- **32-40344-0000**
  Heat sink for Intel® Pentium® N4200, Celeron® N3350, Standard operating temperature

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