

# LEC-AL

**SMARC<sup>®</sup> Short Size Module with Intel Atom<sup>®</sup> E3900 Series, Pentium<sup>®</sup> N4200 or Celeron<sup>®</sup> N3350 Processor**

## Features

- Dual or quad-core Intel Atom<sup>®</sup> E3900 Series or Pentium<sup>®</sup> N4200 or Celeron<sup>®</sup> N3350 Processor SoC
- Up to 8 GB DDR3L at 1867 MT/s
- Triple display support
- Dual channel LVDS (18/24-bit)
- HDMI/DP++, DP++
- 2x MIPI CSI camera (2/4 lanes)
- 1x GbE with IEEE1588
- 1x SATA 3.0, onboard eMMC



## Specifications

### • Core System

#### CPU

Intel Atom<sup>®</sup> E3950, 4 cores, 2.0 GHz, 12 W TDP  
 Intel Atom<sup>®</sup> E3940, 4 cores, 1.8 GHz, 9.5 W TDP  
 Intel Atom<sup>®</sup> E3930, 2 cores, 1.8 GHz, 6.5 W TDP  
 Intel Pentium<sup>®</sup> N4200, 4 cores, 2.5 GHz, 6W TDP  
 Intel<sup>®</sup> Celeron<sup>®</sup> N3350, 2 cores, 2.4 GHz, 6W TDP

#### Memory

Up to 8 GB DDR3L at 1867 MT/s  
 Single/dual channel memory 1-2 64bit, non-ECC

#### Embedded BIOS

AMI UEFI with CMOS backup in 8 MB SPI BIOS, Fast Boot support

#### Cache

2 MB L2 cache

#### SEMA Board Controller

Supports: Voltage/Current monitoring, Power Sequencing, Logistics and Forensic Information, Flat Panel Control, I<sup>2</sup>C Bus Control, GPIO Control, User Flash, Failsafe BIOS (dual BIOS), Watchdog Timer and Fan Control

### • Ethernet

#### Intel<sup>®</sup> MAC/PHY

1x Intel<sup>®</sup> i210-IT or i210-AT Ethernet controller

#### Interface

1x 10/100/1000 GbE, IEEE 1588 trigger signals

### • Video

#### GPU Feature Support

9th generation Intel<sup>®</sup> graphics core architecture with up to 18 execution units, supports three independent displays 2D and 3D graphics hardware acceleration

Support for DirectX 12, OpenGL 4.2, OpenCL 1.2 Video decode HW acceleration for H.265/HEVC, H.264, MPEG2, MVC, VC-1, WMV9, JPEG/MJPEG, VP8, VP9 Video encode HW acceleration for H.265/HEVC, H.264, MPEG2, MVC, JPEG/MJPEG, VP8, VP9 (resolution depends on operating system)

#### LVDS

Dual channel LVDS (18/24-bit)

#### HDMI/DP++

HDMI up to 3840 x 2160 @ 30Hz

#### DP++

DP++ up to 4096 x 2160 @ 60Hz

### • Power

#### Standard Input

3.0 V~5.25 V DC ±5%

#### Power States

C0-C6, S0, S3, S4, S5

### • Audio

#### Chipset

Intel<sup>®</sup> HD Audio integrated in SoC

#### Ports

1x I<sup>2</sup>S and 1x HDA for audio codec on carrier

## Specifications

### • I/O Interfaces

#### PCIe

4x PCIe x1 Gen2

#### USB 2.0

1x USB 2.0 OTG, 5x USB 2.0 host

#### USB 3.0

2x USB 3.0 host

#### SATA

1x SATA 3.0 (6 Gbit/s)

#### SDIO

1x SDIO 3.0 (4bit)

#### Camera

2x MIPI CSI camera (2L/4L)

#### Serial

1x SPI, 1x eSPI, 4x I<sup>2</sup>C, 4x UART, 1x SMBus, 1x LPC, 1x DB40

#### eMMC

Onboard eMMC 5.0 (4-64 GByte)

#### GPIO

12x GPIO (interrupt capable)

### • Operation System

#### Standard Support

Windows 10 IOT Enterprise, Windows 10 IOT Core, Yocto Linux

#### On Request

VxWorks, Android

### • Mechanical and Environmental

#### Form Factor

SMARC Specifications v2.0

#### Dimension

SMARC short size module, 82 mm x 50 mm

#### Operating Temperature

Standard: 0°C to +60°C

Extreme Rugged: -40°C to +85°C

#### Humidity

5-90% RH operating, non-condensing

5-95% RH storage (and operating with conformal coating)

#### Shock and Vibration

IEC 60068-2-64 and IEC-60068-2-27, MIL-STD-202 F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D

#### HALT

Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

### • Intelligent Middleware

#### SEMA<sup>®</sup>



Local management, control of embedded computer systems

Extended EAPI for monitoring, controlling and analytics applications

Multiple OS support and across platforms (x86, ARM)

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## Functional Diagram

