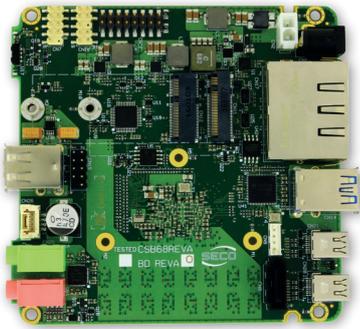## SBC-eNUC-APL
embedded NUC™ SBC with Intel® Atom® X Series, Celeron® J/N Series, Pentium® N Series (Codename: Apollo Lake) Processors

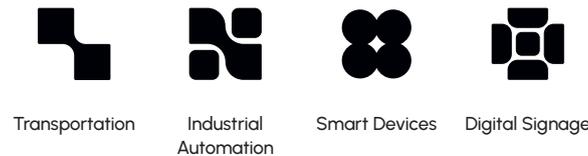# Flexible and expandable full industrial x86 eNUC SBC

HIGHLIGHTS

CPU
Intel® Atom® X Series, Intel® Celeron® J / N Series and Intel® Pentium® N Series

CONNECTIVITY
2x GbE; M.2 WWAN and WLAN slots; CIR sensor; 2x I2C; 8x GPI/Os

GRAPHICS
Integrated Intel® HD Graphics 500 series controller

MEMORY
Up to 8GB LPDDR4 memory

Available in Industrial Temperature Range

embedded NUC™ | SGeT STANDARDIZATION GROUP FOR EMBEDDED TECHNOLOGIES | intel partner Gold

Windows 10 Enterprise | Windows IoT | Linux | yocto PROJECT

MAIN FIELDS OF APPLICATION

Transportation | Industrial Automation | Smart Devices | Digital Signage

FEATURES

Processor	Intel® Atom® **x5-E3930** Dual Core @1.3 GHz (Burst 1.8GHz), 2MB L2 Cache, 6.5W TDP Intel® Atom® **x5-E3940** Quad Core @1.6 GHz (Burst 1.8GHz), 2MB L2 Cache, 9.5W TDP Intel® Atom® **x7-E3950** Quad Core @1.6 GHz (Burst 2.0GHz), 2MB L2 Cache, 12W TDP Intel® Pentium® **N4200** Quad Core @1.1GHz (Burst 2.5GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® **N3350** Dual Core @1.1GHz (Burst 2.4GHz), 2MB L2 Cache, 6W TDP Intel® Celeron® **J3455**, Quad Core @1.5GHz (Burst 2.3GHz), 2MB L2Cache, 10W TDP Intel® Celeron® **J3355**, Dual Core @2.0GHz (Burst 2.5GHz), 2MB L2Cache, 10W TDP	**Mass Storage**	Optional eMMC drive onboard M.2 SATA SSD slot (Socket 2 Key B Type 3042/2260 **) microSD Card slot SATA 7p M connector
		Networking	2x Gbit LAN / Intel Gigabit Ethernet i21x family controller M.2 WWAN Slot for Modems (Socket 2 Key B Type 3042/2260 **) M.2 WLAN Connectivity Slot for WiFi/BT (Socket 1 Key E type 2230)
		USB	2 x USB 3.0 Host ports on USB 3.0 Type-A sockets 2 x USB 2.0 Host ports on USB 2.0 Type-A sockets 2 x USB 2.0 Host ports on internal pin header 1 x USB 3.0 Host port on SSD/WWAN M.2 slot 1 x USB 2.0 Host port on WLAN M.2 Slot
Max Cores	4	**PCI-e**	1 x PCI-e x2 port on M.2 SSD/WWAN Slot 1 x PCI-e x1 port on WLAN M.2 Slot
Max Thread	4	**Audio**	HD Audio codec / Cirrus Logic CS4207 Mic In and Line Out Audio jacks Amplified Speaker output on internal pin header
Memory	Quad Channel soldered down LPDDR4 memory, up to 8GB	**Serial Ports**	2 x RS-232/RS-422/RS-485 UARTS software configurable, on internal Pin Header
Graphics	Integrated Intel® HD Graphics 500 series controller, with up to 18 Execution Units 4K HW decoding and encoding of HEVC(H.265), H.264, VP8, VP9, MVC Three independent display support	**Other Interfaces**	2 x I2C + 8 x GPI/Os on Feature connector Button / LED front panel header CIR (Consumer InfraRed) sensor microSIM slot for M.2 WWAN Modem Optional TPM 2.0 on-board
Video Interfaces	Two DP++ 1.2 interfaces on miniDP connectors (supports HDMI® displays through external adapter) embedded Display Port (eDP) internal connector LVDS through optional external adapter	**Power Supply**	+18V$_{DC}$ ÷ +32 V$_{DC}$ recommended +15V$_{DC}$ ÷ +36 V$_{DC}$ absolute RTC battery
Video Resolution	DP: Up to 4096 x 2160 @60HZ eDP: Up to 3840 x 2160 @60Hz HDMI®: Up to 3840 x 2160 @30Hz LVDS: Up to 1920 x 1200 @ 60Hz	**Operating System**	Microsoft® Windows 10 Enterprise (64 bit) Microsoft® Windows 10 IoT Core Yocto (64 bit) Linux

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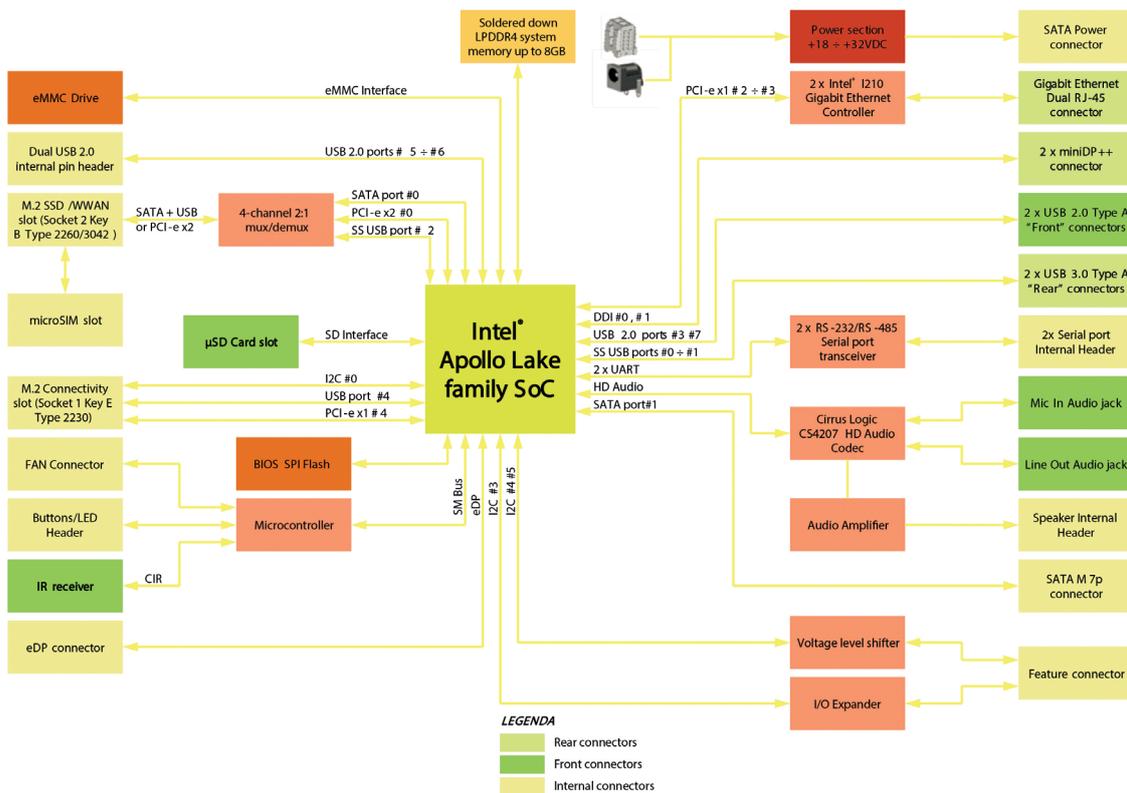
FEATURES

🌡	Operating Temperature*	0°C ÷ +60°C (Commercial version) -40°C ÷ +85°C (Industrial version)
∟	Dimensions	101.6 x 101.6 mm (4" x 4")

* Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.
** SATA SSD and WWAN functionalities share the same slot and are therefore mutually exclusive.

BLOCK DIAGRAM

LEGENDA
- Rear connectors
- Front connectors
- Internal connectors

Streamline and expedite your edge computing implementations

EDGEHOG OS

A flexible operating system that adapts to your needs, thanks to the customization tool and Docker support. Reliability and security are built-in through a dual-partition system and native integration with Exein's robust AI-based protection.

DEVICE MANAGER

Update, configure, and manage remote devices. Optimize time and costs to maximize operational efficiency and security without the need for costly field interventions.

DATA ORCHESTRATION

Integrate third-party services, simplify data flows and analysis, and enhance business efficiency by enabling easy and fast utilization of AI.

PORTAL

Analyze data from remote devices, customize the user experience with applications tailored to user needs, and manage user rights, company access, and tenant privileges.

Cloud Agnostic

On Premise — Google Cloud Platform

Azure — aws

SERVICES

Custom Apps

Clea — kubernetes

Device Manager — Edgehog

Data Orchestration — Astarte

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SECO — Third Party Hardware

EDGEHOG OS

Containers — SDK

Double Partition — Device Manager Agent — Incremental Updates

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