Features

Performance for Industrial IoT Applications
- Intel® Atom™ Processor (quad-core)
- Up to 8 GB DDR3L System RAM
- Hardware-based Intel® Virtualization Technology
- Higher per-watt performance
- TPM onboard for added security

Rugged Design for Demanding Environments
- -20°C to +60°C Operating Temperature Range
- NANO-ITX Form Factor
- Multiple mounting options:
  VESA, Wall/Panel, DIN rail

Fast Graphics at High Resolutions
- Intel Low Power Gen9 Graphics Engine
- Supports Multiple Displays

Memory
- One 204-pin SODIMM supports DDR3L up to 8GB

Connectivity and I/O for Embedded Systems
- Dual Gigabit Ethernet
- Supports one 2.5" SATA HDD/SSD, one mSATA socket, one Micro SD socket, and two USB 3.0 ports

Expansion Options
- One full-size Mini-PCIe socket, one M.2 socket (Type E)
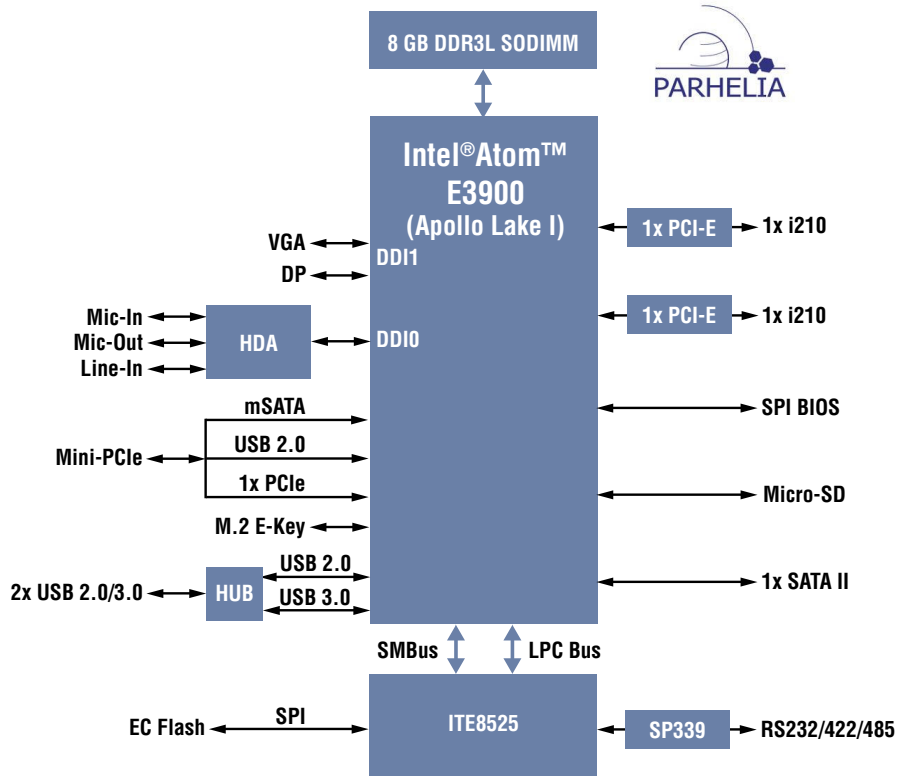
Product Description

WINSYSTEMS' SYS-ITX-N-3900 is an industrial embedded computer based on the Intel® Atom™ E3900 Apollo Lake processor family. It uses less than 12 watts for fanless applications and performs reliably in industrial operating temperatures ranging from -20° to +60°C. It includes a SODIMM socket supporting up to 8 GB of DDR3L system memory and internal mounting support for one 2.5" SATA HDD/SSD. Additional storage is available through MiniPCIe, mSATA and microSD.

The SYS-ITX-N-3900 is a full-featured embedded computer with onboard I/O that simultaneously supports VGA and DisplayPort video, dual Gigabit Ethernet ports, two USB 3.0 ports, one serial RS-232/422/485 port, audio, and watchdog timer. It also has a full-size MiniPCIe socket, M.2 socket, and an antenna hole for WiFi or 3G/GPS module.

This embedded computer supports Linux, Windows® 10 desktop, Windows 10 IoT, and other x86-compatible real-time operating systems. Drivers are available from the WinSystems website. The SBC is designed for long-term availability.
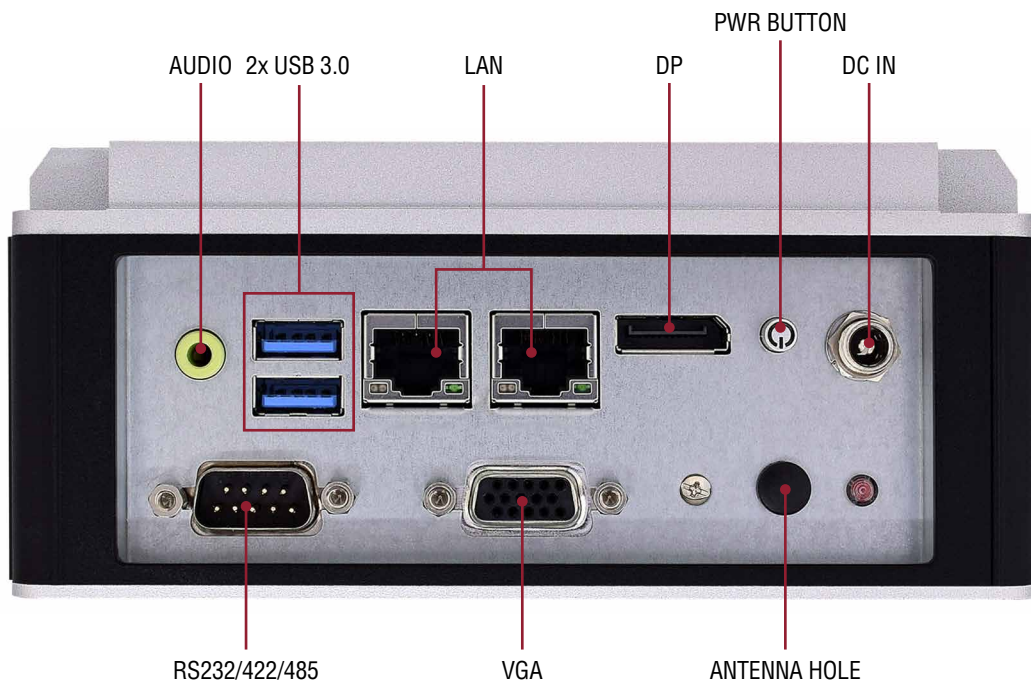
The SYS-ITX-N-3900 is FCC- and CE-certified, and designed for industrial IoT, medical, communications and digital signage applications.

SYS-ITX-N-3900

Block Diagram

8 GB DDR3L SODIMM

PARHELIA

Intel®Atom™ E3900 (Apollo Lake I)

VGA — DDI1
DP — DDI1

Mic-In
Mic-Out — HDA — DDI0
Line-In

mSATA
Mini-PCIe — USB 2.0
1x PCIe

M.2 E-Key

2x USB 2.0/3.0 — HUB — USB 2.0 / USB 3.0

1x PCI-E → 1x i210

1x PCI-E → 1x i210

SPI BIOS

Micro-SD

1x SATA II

SMBus   LPC Bus

EC Flash — SPI — ITE8525 — SP339 → RS232/422/485

Connectors

AUDIO   2x USB 3.0   LAN   DP   PWR BUTTON   DC IN

RS232/422/485   VGA   ANTENNA HOLE

SYS-ITX-N-3900

Technical Specifications

PROCESSOR	**Intel Atom x5-E3940** Quad Core, up to 1.8 GHz (base frequency 1.6 GHz)	**Intel Atom x7-E3950** Quad Core, up to 2.0 GHz (base frequency 1.6 GHz)
	• Cache up to 2MB (for Quad Core) • Support Intel® VT-x techology	
MEMORY	• Up to 8GB DDR3L 1600/1866 MHz SDRAM on 1x 204-pin SODIMM	
STORAGE	• 1x SATA 2.0 • 1x Micro-SD Socket • 1x mSATA socket	

DISPLAY	• Graphic Controller
	  – Intel® Gen 9 graphic engine supports DirectX 12, QuickSync, OpenGL
	  – Video decode hardware acceleration supports for H.265/HEVC, H.264, MPEG2, MVC, VC-1, WMV9 and VP8 formats
	• Display Interface
	  – VGA: 1x VGA connector, resolution up to 1920x1200 (WUXGA)
	  – DP: 1x DP connector, resolution up to 4096 x 2160 @ 60Hz	

SERIAL INTERFACE	• 1x Serial Port RS232/422/485 • 2x USB 3.0 ports	
NETWORK INTERFACE	• 2x Intel I210-IT Gigabit Ethernet	
ONBOARD I/O	• HDA controller integrated in Intel® SoC • Realtek ALC892 HDA codec, audio jack on rear I/O with Line-out • Watchdog timer programmable by embedded controller	
EXPANSION BUS	• 1x Full size Mini-PCIe • 1x M.2 Socket, with E key, type 2230	
POWER	• Typical power +12-24V DC input, 7 Watts	
SOFTWARE	• AMI UEFI BIOS	
ENVIRONMENTAL	• Operation temperature: -20 to +60°C • Storage temperature: -40 to +85°C • Relative humidity: 5 to 95%, non-condensing	

MECHANICAL	• Dimensions
	  – Length: 5.9 in. (150mm)
	  – Width: 5.9 in. (150mm)
	  – Height: 2.36 in. (60mm)
	• Weight: 2.9 lbs (1.3 kg)
	• Mounting Options
	  – VESA
	  – Wall/ Panel
	  – DIN rail	

Order Information

SBC PART NUMBER	**SYS-ITX-N-3940-1-0** Intel Atom x5-E3940 Quad Core, up to 1.8 GHz (base frequency 1.6 GHz), DDR3L SDRAM, VGA, DP, dual GbE LAN, micro SD, mSATA, M.2	**SYS-ITX-N-3950-1-0** Intel Atom x7-E3950 Quad Core, up to 2.0 GHz (base frequency 1.6 GHz), DDR3L SDRAM, VGA, DP, dual GbE LAN, micro SD, mSATA, M.2
RAM	• 204-pin SODIMM supports DDR3L up to 8GB	

Expansion and Customization Options

WINSYSTEMS provides additional cables, expansion cards, power supplies, and solid state drives to complete your embedded computing solution including data acquisition, communications, location, and other features. Our Application Engineers are available to guide you through product selection and customized options.

Contact an Application Engineer or visit our website for more information.

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