WinSystems®
The Embedded Systems Authority

Features

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

Rugged Design for Demanding Environments
- -40°C to +85°C Operating Temperature Range
- NANO-ITX Form Factor

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

Memory
- One 204-pin SODIMM supports DDR3L up to 8GB
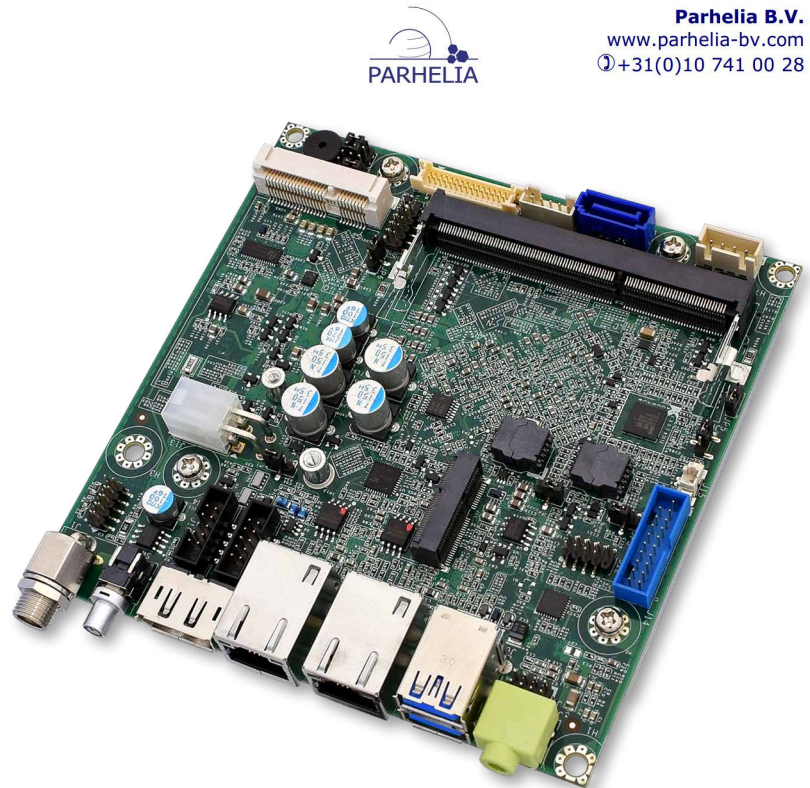
Connectivity and I/O for Embedded Systems
- Dual Gigabit Ethernet
- Supports one SATA 3.0 port, one mSATA socket, one Micro-SD socket
- Eight General Purpose Input/Output (GPIO) ports
- Four USB 3.1 Gen 1 ports

Expansion Options
- One Mini-PCIe socket and one M.2 socket (Type E)

Hardware Security
- TPM 2.0 on board
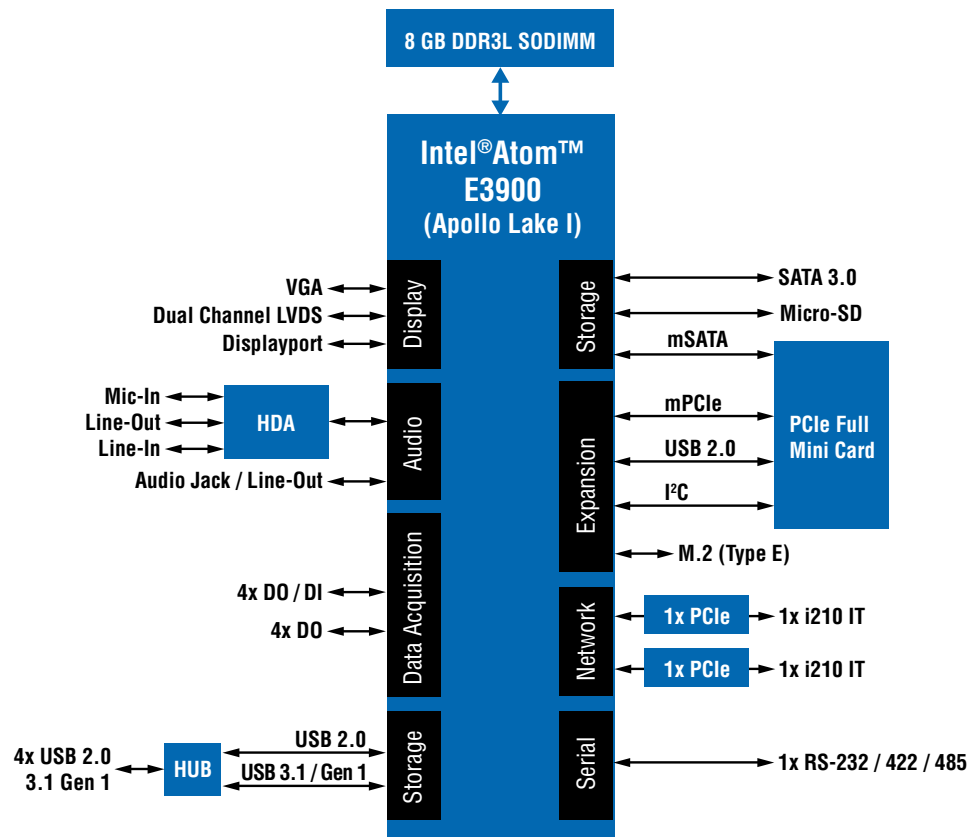
Product Description

WinSystems' ITX-N-3900 is a NANO-ITX Single Board Computer (SBC) 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 -40° to +85°C. It includes a SODIMM socket supporting up to 8 GB of DDR3L system memory, one high-speed SATA storage interface, microSD storage, and one mSATA storage interface.

The ITX-N-3900 is a full-featured SBC with onboard I/O that simultaneously supports VGA/DisplayPort/LVDS video, includes dual Gigabit Ethernet ports, four USB 3.1 Gen 1 ports, one serial RS-232/422/485 port, eight general purpose input-output (GPIO) lines, audio, and a watchdog timer. It also has a MiniPCIe socket and an M.2 socket (Type E) for additional I/O expansion. This system comes with TPM 2.0 on-board for added hardware security. Enabling features such as BitLocker and secure key storage.
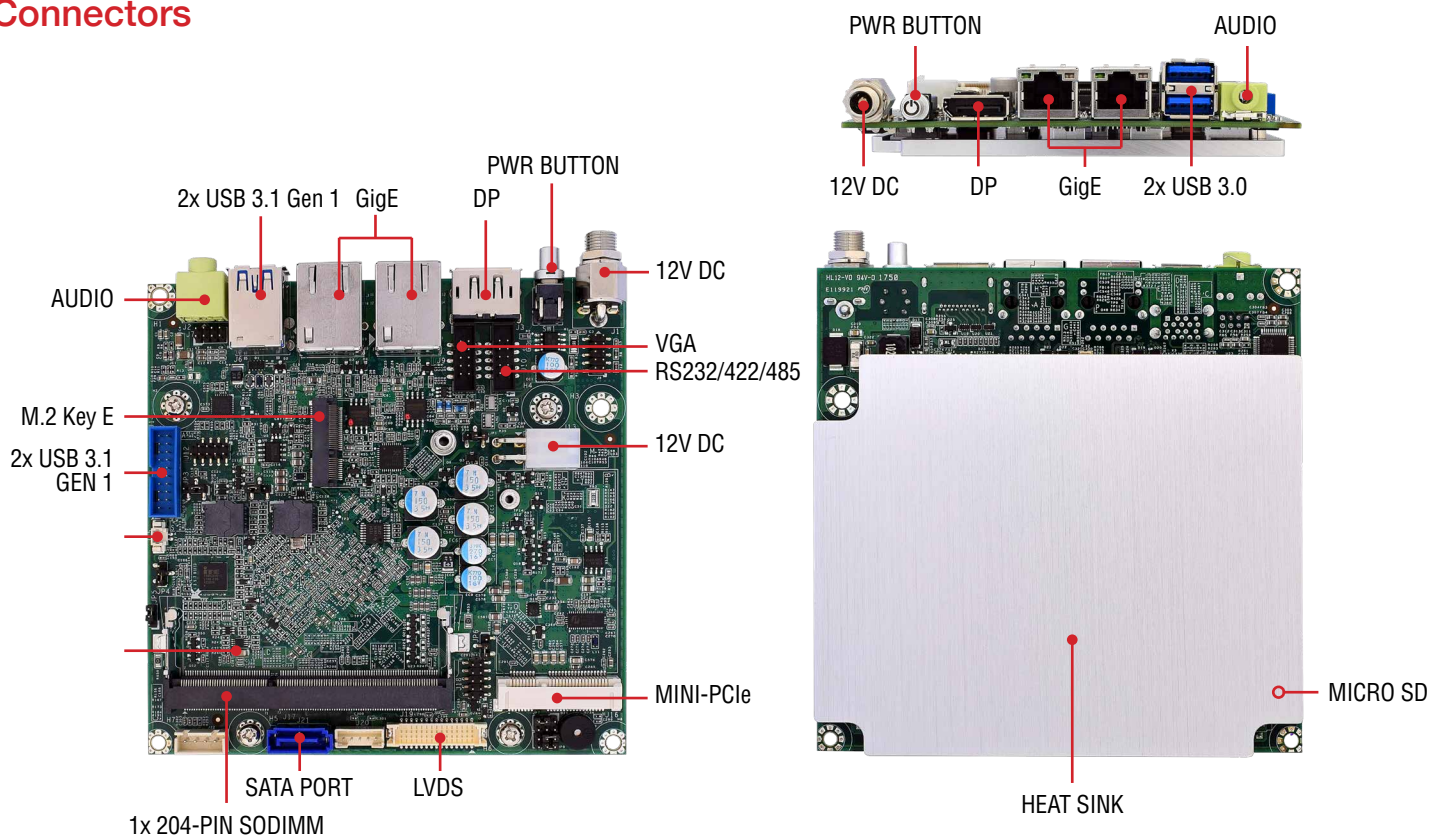
The ITX-N-3900 is designed for long-term availability and supports Linux, Windows® 10 desktop, Windows 10 IoT, and other x86-compatible real-time operating systems (RTOS). Drivers are available from the WinSystems website.

The ITX-N-3900 is FCC and CE certified, and designed for industrial IoT, medical, communications and digital signage applications.

Block Diagram

Connectors

Technical Specifications

PROCESSOR	Intel Atom E3930 Dual Core, up to 1.8 GHz	Intel Atom E3940 Quad Core, up to 1.8 GHz	Intel Atom E3950 Quad Core, up to 2.0 GHz
	• Cache up to 2MB (for Quad Core) • Support Intel® VT-x techology		
MEMORY	• Up to 8GB DDR3L 1600/1866 SDRAM on 1x 204pin SODIMM		
STORAGE	• 1x SATA 3.0 • 1x mSATA • 1x Micro SD socket		

DISPLAY	• Graphic Controller
	  – Intel® Gen 9 graphic engine supports DirectX 12, OpenGL 4.2 / OpenCL 2.0
	  – Video decode hardware acceleration supports for H.264, H.265, MPEG2, MVC, VC-1, WMV9 , JPEG, VP8, and VP9
	• Display Interface
	  – LVDS: Dual channel 24bit LVDS on board connector, resolution up to 1920x1200 @60Hz
	  – VGA: 1x on-board connector, resolution up to 2560x1600
	  – DP: 1x DP port on rear I/O, resolution up to 4096x2160		

NETWORK INTERFACE	• 1x Serial Port RS232/422/485 on-board connector • 2x USB 3.1 Gen 1 ports on rear I/O • 2x USB 3.1 Gen 1 ports on board with 2.0mm pitch header • GPIO: 8bit configurable controlled by embedded controller		
	• 1x Intel I210IT Gigabit Ethernet controller and 1x RJ45 connector on rear I/O	• Dual Intel I210IT Gigabit Ethernet controller • 2x RJ45 connectors on rear I/O	• Dual Intel I210IT Gigabit Ethernet controller • 2x RJ45 connectors on rear I/O
ONBOARD I/O	• HDA controller integrated in Intel® SoC • Realtek ALC892 HDA codec, audio jack on rear I/O with Line-out and onboard pin header with Line-in, Line-out and Mic-in • Watchdog timer programmable by embedded controller		
EXPANSION BUS	• 1x PCI Express Mini Card • 1x M.2 socket (Type E)		
POWER	• Typical power 12 - 24V DC input, 9 Watts		
SOFTWARE	• Phoenix EFI BIOS		
ENVIRONMENTAL	• Operation temperature: -40 to +85°C • Storage temperature: -40 to +85°C • Relative humidity: 5 to 95%, non-condensing		

MECHANICAL	• Dimensions
	  – Length: 4.72 in. (120mm)
	  – Width: 4.72 in. (120mm)
	• Weight: 0.60 lbs (0.272 kg)		

Order Information

SBC PART NUMBER	ITX-N-3930-1-0 Intel Atom E3930 up to 1.80GHz Dual Core, DDR3L SDRAM 1600 MHz, single GbE LAN	ITX-N-3940-2-0 Intel Atom E3940 up to 1.80GHz Quad Core, DDR3L SDRAM 1866 GHz, dual GbE LAN	ITX-N-3950-2-0 Intel Atom E3950 up to 2.0GHz Quad Core, DDR3L SDRAM 1866 GHz, dual GbE LAN
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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