

## Features

### Performance for Industrial IoT Applications

- Intel<sup>®</sup> Atom<sup>™</sup> Processor (dual & quad-core)
- Up to 8 GB DDR3L System RAM
- Hardware-based Intel<sup>®</sup> 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

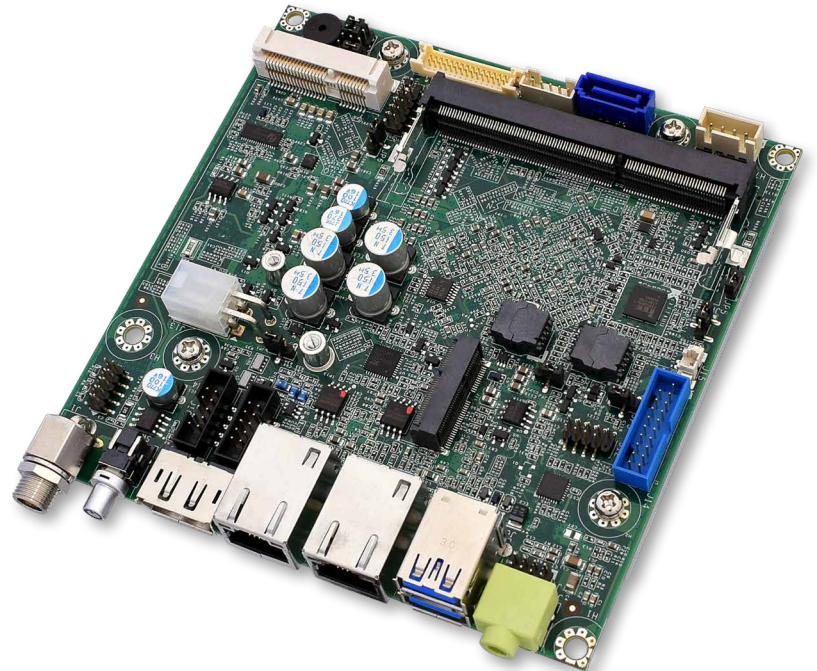
- Dual Gigabit Ethernet
- Supports one SATA 3.0 port, one mSATA socket, one Micro-SD socket
- Eight General Purpose Input/Output (GPIO) ports
- Four USB 3.1 Gen 1 ports

### Expansion Options

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

### Hardware Security

- TPM 2.0 on board



## Product Description

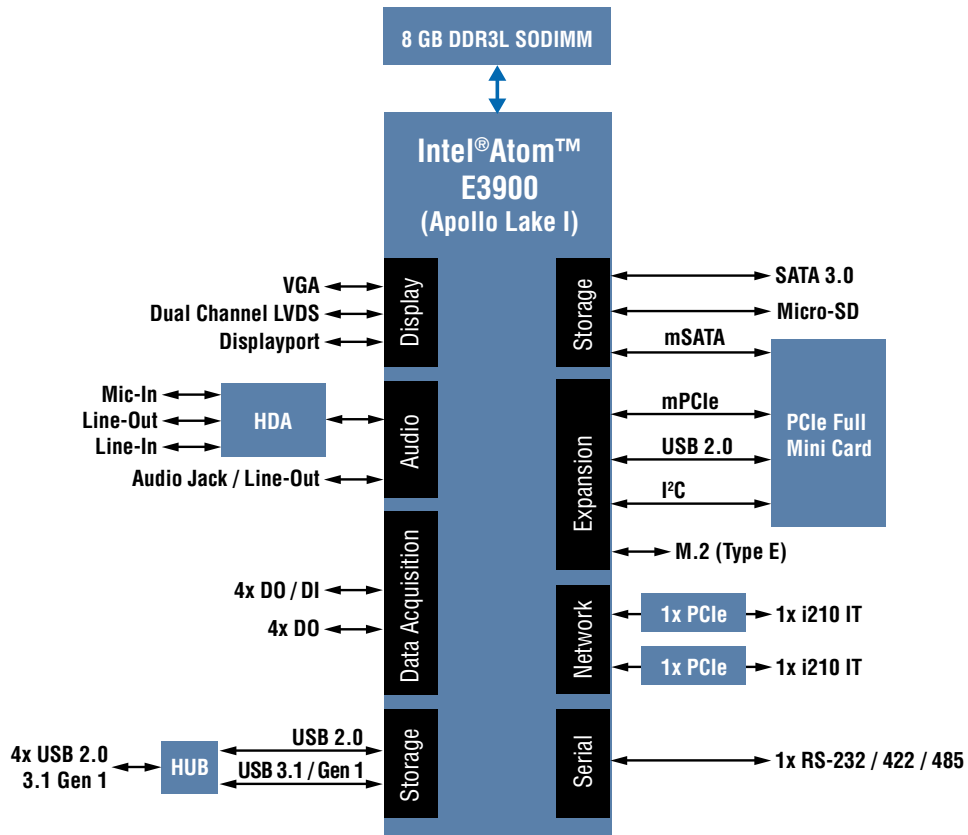
WinSystems' ITX-N-3900 is a NANO-ITX Single Board Computer (SBC) based on the Intel<sup>®</sup> Atom<sup>™</sup> E3900 Apollo Lake processor family. It uses less than 12 watts for fanless applications and performs reliably in industrial operating temperatures ranging from -40° to +85°C. It includes a 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.

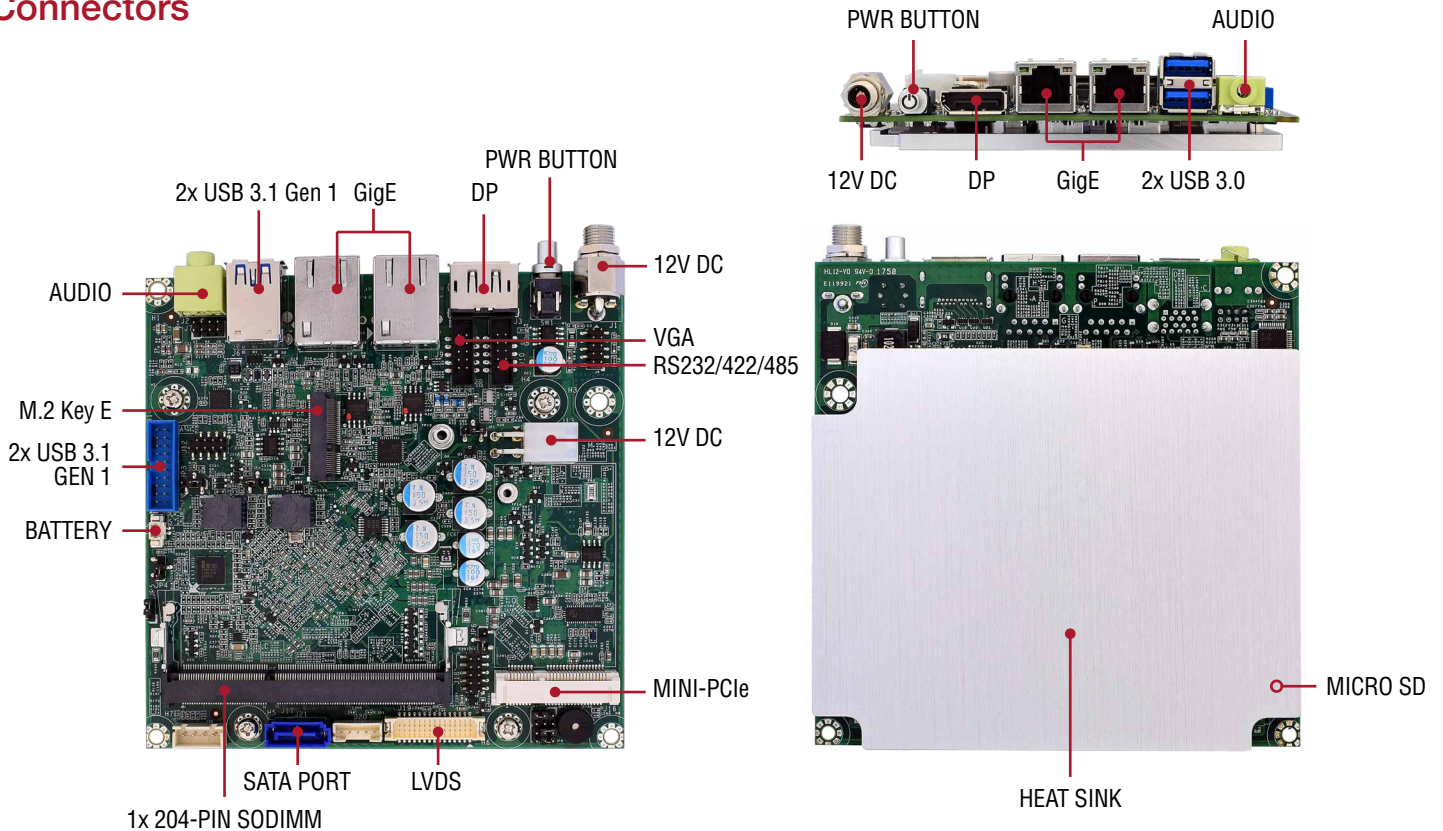
The ITX-N-3900 is designed for long-term availability and supports Linux, Windows<sup>®</sup> 10 desktop, Windows 10 IoT, and other x86-compatible real-time operating systems (RTOS). Drivers are available from the WinSystems website.

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

Block Diagram



Connectors



# ITX-N-3900

## Technical Specifications

<b>PROCESSOR</b>	<b>Intel Atom E3930</b> Dual Core, up to 1.3 GHz	<b>Intel Atom E3940</b> Quad Core, up to 1.6 GHz	<b>Intel Atom E3950</b> Quad Core, up to 1.6 GHz
	<ul style="list-style-type: none"> <li>Cache up to 2MB (for Quad Core)</li> <li>Support Intel® VT-x technology</li> </ul>		
<b>MEMORY</b>	<ul style="list-style-type: none"> <li>Up to 8GB DDR3L 1600/1866 SDRAM on 1x 204pin SODIMM</li> </ul>		
<b>STORAGE</b>	<ul style="list-style-type: none"> <li>1x SATA 3.0</li> <li>1x mSATA</li> <li>1x Micro SD socket</li> </ul>		
<b>DISPLAY</b>	<ul style="list-style-type: none"> <li>Graphic Controller           <ul style="list-style-type: none"> <li>Intel® Gen 9 graphic engine supports DirectX 12, OpenGL 4.2 / OpenCL 2.0</li> <li>Video decode hardware acceleration supports for H.264, H.265, MPEG2, MVC, VC-1, WMV9, JPEG, VP8, and VP9</li> </ul> </li> <li>Display Interface           <ul style="list-style-type: none"> <li>LVDS: Dual channel 24bit LVDS on board connector, resolution up to 1920x1200 @60Hz</li> <li>VGA: 1x on-board connector, resolution up to 2560x1600</li> <li>DP: 1x DP port on rear I/O, resolution up to 4096x2160</li> </ul> </li> </ul>		
<b>NETWORK INTERFACE</b>	<ul style="list-style-type: none"> <li>1x Serial Port RS232/422/485 on-board connector</li> <li>2x USB 3.1 Gen 1 ports on rear I/O</li> <li>2x USB 3.1 Gen 1 ports on board with 2.0mm pitch header</li> <li>GPIO: 8bit configurable controlled by embedded controller</li> <li>Dual Intel I210IT Gigabit Ethernet controller</li> <li>2x RJ45 connectors on rear I/O</li> </ul>		
<b>ONBOARD I/O</b>	<ul style="list-style-type: none"> <li>HDA controller integrated in Intel® SoC</li> <li>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</li> <li>Watchdog timer programmable by embedded controller</li> </ul>		
<b>EXPANSION BUS</b>	<ul style="list-style-type: none"> <li>1x PCI Express Mini Card</li> <li>1x M.2 socket (Type E)</li> </ul>		
<b>POWER</b>	<ul style="list-style-type: none"> <li>Typical power 12 - 24V DC input, 9 Watts</li> </ul>		
<b>SOFTWARE</b>	<ul style="list-style-type: none"> <li>Phoenix EFI BIOS</li> </ul>		
<b>ENVIRONMENTAL</b>	<ul style="list-style-type: none"> <li>Operation temperature: -40 to +85°C</li> <li>Storage temperature: -40 to +85°C</li> <li>Relative humidity: 5 to 95%, non-condensing</li> </ul>		
<b>MECHANICAL</b>	<ul style="list-style-type: none"> <li>Dimensions           <ul style="list-style-type: none"> <li>Length: 4.72 in. (120mm)</li> <li>Width: 4.72 in. (120mm)</li> </ul> </li> <li>Weight: 0.60 lbs (0.272 kg)</li> </ul>		

## Order Information

<b>SBC PART NUMBER</b>	<b>ITX-N-3930-2-0</b> <b>Build to Order Only (non-stock item)</b> Intel Atom E3930 up to 1.30 GHz Dual Core, DDR3L SDRAM 1600 MHz, dual GbE LAN	<b>ITX-N-3940-2-0</b> Intel Atom E3940 up to 1.60 GHz Quad Core, DDR3L SDRAM 1866 MHz, dual GbE LAN	<b>ITX-N-3950-2-0</b> Intel Atom E3950 up to 1.6 GHz Quad Core, DDR3L SDRAM 1866 MHz, dual GbE LAN
<b>RAM</b>	<b>204-pin SODIMM supports DDR3L up to 8GB</b> <ul style="list-style-type: none"> <li>SODIMM204-3-16-2G 2GB of DDR3L RAM</li> <li>SODIMM204-3-16-4G 4GB of DDR3L RAM</li> <li>SODIMM204-3-16-8GW 8GB of DDR3L RAM</li> </ul>		
<b>CABLES</b>	<b>CBL-SET-ITX-N-3900 Cable Set</b> (includes the following cables): <ul style="list-style-type: none"> <li>CBL-SER1-Y02-06A (1x Serial port DB9 cable)</li> <li>CBL-VGA-Y02-04A (VGA display output cable)</li> <li>CBL-USB2-U03-08A (2x USB 3.1 Gen 1 cable)</li> </ul>		

## 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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