WINSYSTEMS®

Features

Performance for Industrial IoT Edge Computing

- Intel Apollo Lake-I E3900 Processor (Dual or Quad core)
- Up to 8GB DDR3L ECC System Memory
- Up to 2.0GHZ CPU Clock Rate
- Time-Coordinated Computing
- Soldered down TPM 2.0 Hardware Security Enabled
- 10+ Year Availability

Rugged Design for Demanding Environments

- -40°C to +85°C Operating Temperature Range
- Wide Range Power Input (10 - 50 V DC)

Graphics for Digital Signage

- Supports up to three Independent Displays
- 2x DisplayPort with 4K Resolution
- LVDS with backlight and touch control

Connectivity and I/O for Embedded Data Acquisition

- 2x Gigabit Ethernet
- 2x USB 3.1 Gen 1 and 4x USB 2.0
- 8x General Purpose Input/Output (GPIO)
- 2x channel Analog-to-Digital (ADC)
- 3x Serial Ports
- HD Audio

Storage

- eMMC
- SATA with SATA Power
- mSATA

Expansion and Configuration Options for Semi-Custom Solutions

- Mini-PCI Express
- M.2 E-Key 2230 Form Factor
- WINSYSTEMS' Modular IO80 Expansion

Product Description

WINSYSTEMS' SYS-427 is a rugged, embedded computer featuring the latest generation Intel Apollo Lake-I SOC processor. Its small size, low power and extended operational temperature make it a great fit for rugged embedded systems in the industrial control, transportation, energy, and industrial IoT markets.
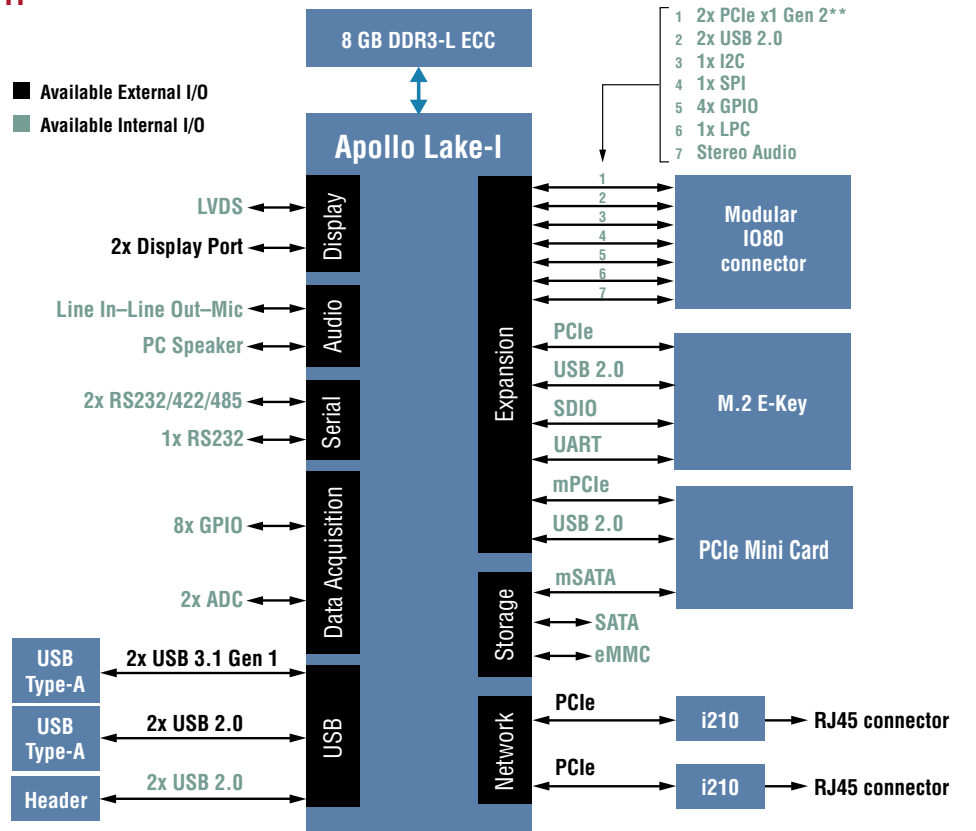
This full-featured embedded computer supports three independent video displays (two DisplayPort and LVDS video), dual Ethernet, two USB 3.1 Gen 1 ports, four USB 2.0 ports, eight general purpose I/O (GPIO) lines, two channels Analog-to-Digital Converter (ADC), stereo audio, and a watchdog timer.

The WINSYSTEMS SYS-427 embedded computer features a Dual or Quad-Core processor, up to 8GB of socketed SODIMM DDR3L ECC SDRAM, and a mSATA socket with optional soldered-down eMMC device for solid state storage of operating systems (OS) and applications. Additionally, the board supports an external SATA device.

The computer has expansion capabilities via a M.2 connector E-Key 2230, Mini-PCIe socket (with mSATA support) and WINSYSTEMS' Modular IO80 interface.
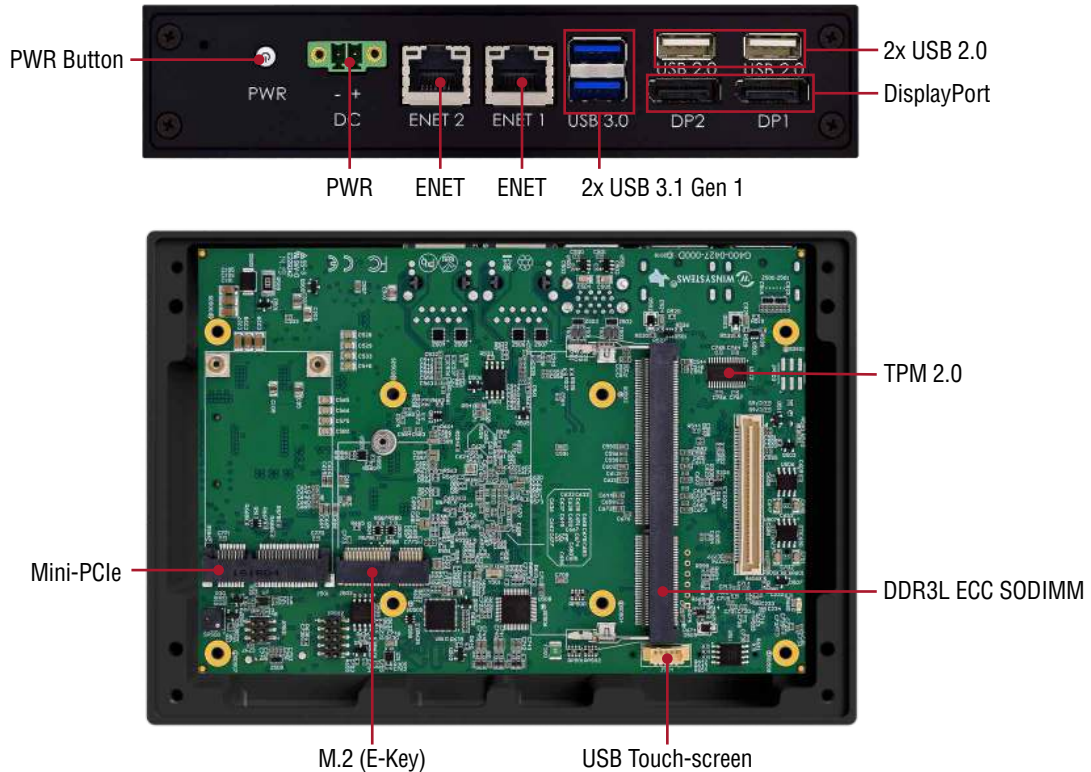
The SYS-427 supports Linux, Windows® 10, and other x86-compatible real-time operating systems. Drivers are available from the WINSYSTEMS website.

Block Diagram

8 GB DDR3-L ECC

Apollo Lake-I

■ Available External I/O
■ Available Internal I/O

1 2x PCIe x1 Gen 2**
2 2x USB 2.0
3 1x I2C
4 1x SPI
5 4x GPIO
6 1x LPC
7 Stereo Audio

Display
LVDS
2x Display Port

Audio
Line In–Line Out–Mic
PC Speaker

Serial
2x RS232/422/485
1x RS232

Data Acquisition
8x GPIO
2x ADC

USB
USB Type-A — 2x USB 3.1 Gen 1
USB Type-A — 2x USB 2.0
Header — 2x USB 2.0

Expansion
1
2
3
4
5
6
7
Modular IO80 connector

PCIe
USB 2.0
SDIO
UART
M.2 E-Key

mPCIe
USB 2.0
PCIe Mini Card

Storage
mSATA
SATA
eMMC

Network
PCIe — i210 — RJ45 connector
PCIe — i210 — RJ45 connector

*One PCIe x1 lane is software switchable to 1x USB 3.1 Gen 1

Connectors

PWR Button

PWR   DC   ENET 2   ENET 1   USB 3.0   DP2   DP1

2x USB 2.0
DisplayPort

PWR   ENET   ENET   2x USB 3.1 Gen 1

TPM 2.0

Mini-PCIe

DDR3L ECC SODIMM

M.2 (E-Key)

USB Touch-screen

SYS-427

Technical Specifications

PROCESSOR	Intel Atom x5-E3930 Processor Dual-Core, up to 1.8 GHz (base frequency 1.3 GHz)	Intel Atom x5-E3940 Processor Quad-Core, up to 1.8 GHz (base frequency 1.6 GHz)	Intel Atom x7-E3950 Processor Quad-Core, up to 2.0 GHz (base frequency 1.6 GHz)
MEMORY	• SODIMM DDR3L ECC (up to 8GB)		
STORAGE	• eMMC • SATA Connector • mSATA		
DISPLAY	• Three independent video outputs – LVDS with digital backlight and touch control – 2x DisplayPort up to Ultra 4K Resolution (Front Panel I/O)		
NETWORK INTERFACE	• 2x Gigabit Ethernet ports (Front Panel I/O)		
ONBOARD I/O	• 1x Legacy RS232 Interface (8-wire) • 2x Multi-Protocol Serial Ports (4-wire) • 2x USB 3.0 ports (Front Panel I/O) • 2x USB 2.0 ports (Front Panel I/O) • 2x USB 2.0 ports • 8x lines of general purpose digital I/O • 2x channels Analog-to-Digital (ADC) (10-bit resolution) • HD Audio Interface (Line Out, Line In, Mic In) • Speaker output for beep tones • Real-time Clock (RTC) with optional battery back up • Watchdog timer		
EXPANSION BUS	• 1x Mini-PCIe card with mSATA support • 1x M.2 connector 2230 (E-Key) • WinSystems Modular IO80 Interface		
SECURITY	• Soldered down TPM 2.0 hardware security		
POWER	• Wide Input: +10 to 50 VDC, Max Power Usage = 30W • Recommended maximum power supply input rating for the SBC35-427 is 95 W		
SOFTWARE	• Compatible with Linux, Windows10, and other x86 operating systems		
ENVIRONMENTAL	• Operational from -40°C to +85°C (-40 to +185°F)[1] [1] Requires high temperature grade DRAM • RoHS compliant		
COMPLIANCE	• Shock - IEC 60068-2-27 • Vibration - IEC 60068-2-64 • FCC Class A • Recommended DC power input wires/cable with a flammability rating of VW-1 or better		
MECHANICAL	• Dimensions: 6.5 in x 4.5 in x 1.38 in (165 mm x 115 mm x 35 mm) • Weight: 2.0 lb (.92 kg) • PC Board thickness: 0.078 inches		

Order Information

SBC PART NUMBER	SYS-4273EMM-RT-P-I	SYS-4274EMM-RT-P-I	SYS-4275EMM-RT-P-I
	EMM = eMMC (000, 032, 064, 128, 256 GB) **R** = RAM size (2GB, 4GB, 8GB) **T** = RAM temp (C = Commercial, I = Industrial, H = Extended Industrial, A = Automotive) **P** = Flex-Power Module (1 = Power Button, 2 = PoE, 3 = UPS) **I** = Flex-IO Module (1 = Dual USB)		
CABLES AND ACCESSORIES	• CBL-LVDSB-021-20 LVDS and Backlight to AUO panel • CBL-AUDIO-001-20 AUDIO • CBL-DIO8-101-12 GPIO • CBL-SER2-202-12 COM (R232/422/485) • CBL-SER1-202-12 COM (Legacy RS232) • CBL-USB2-006-12 USB • CBL-USB1-202-12 TOUCH Controller • CBL-PWR-124-12 SATA Power • CBL-ADC-001-12 ADC		

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 via Mini-PCie, M.2, and IO80 interfaces. 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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