

Features

Graphics for Digital Signage and Kiosk Applications

- 12-in. Panel PC with Projected Capacitive Multi-touch Screen
- Supports up to two additional Displays
- 2x DisplayPort with 4K Resolution

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

- -30°C to +85°C Operating Temperature Range
- Wide Range Power Input (10 - 50 V DC)
- IP65 certified, front panel and bezel

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' PPC12-427 is a fanless, IP65-certified 12.1-inch panel PC 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 harsh environments in the industrial control, transportation, energy, and industrial IoT markets.

This full-featured Panel PC supports three independent video displays, one LVDS output to the 12.1-inch panel PC, two additional DisplayPorts, 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.

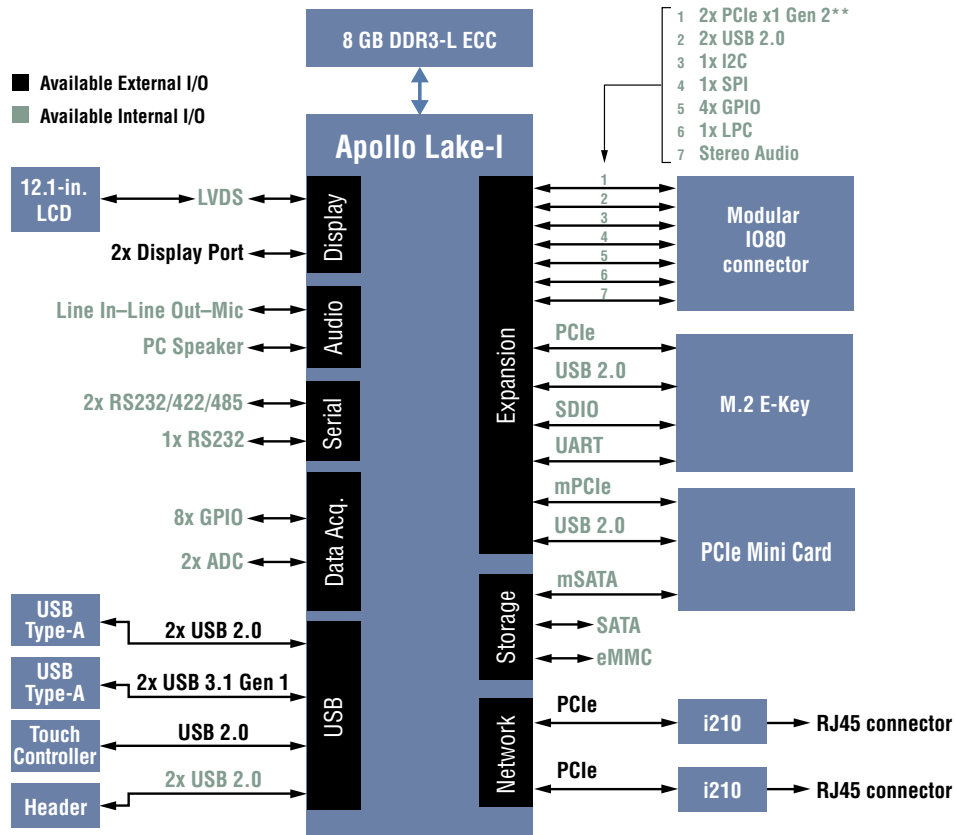
The WINSYSTEMS PPC12-427 features a Dual or Quad-Core processor, up to 8GB of socketed SODIMM DDR3L ECC SDRAM, and a mSATA socket with optional soldered-down eMMC device for solid state storage of operating systems (OS) and applications. Additionally, the board supports an external SATA device.

The Panel PC has expansion capabilities via a M.2 connector E-Key 2230, Mini-PCIe socket (with mSATA support) and WINSYSTEMS' Modular IO80 interface.

The PPC12-427 supports Linux, Windows® 10, and other x86-compatible real-time operating systems. Drivers are available from the WINSYSTEMS website.

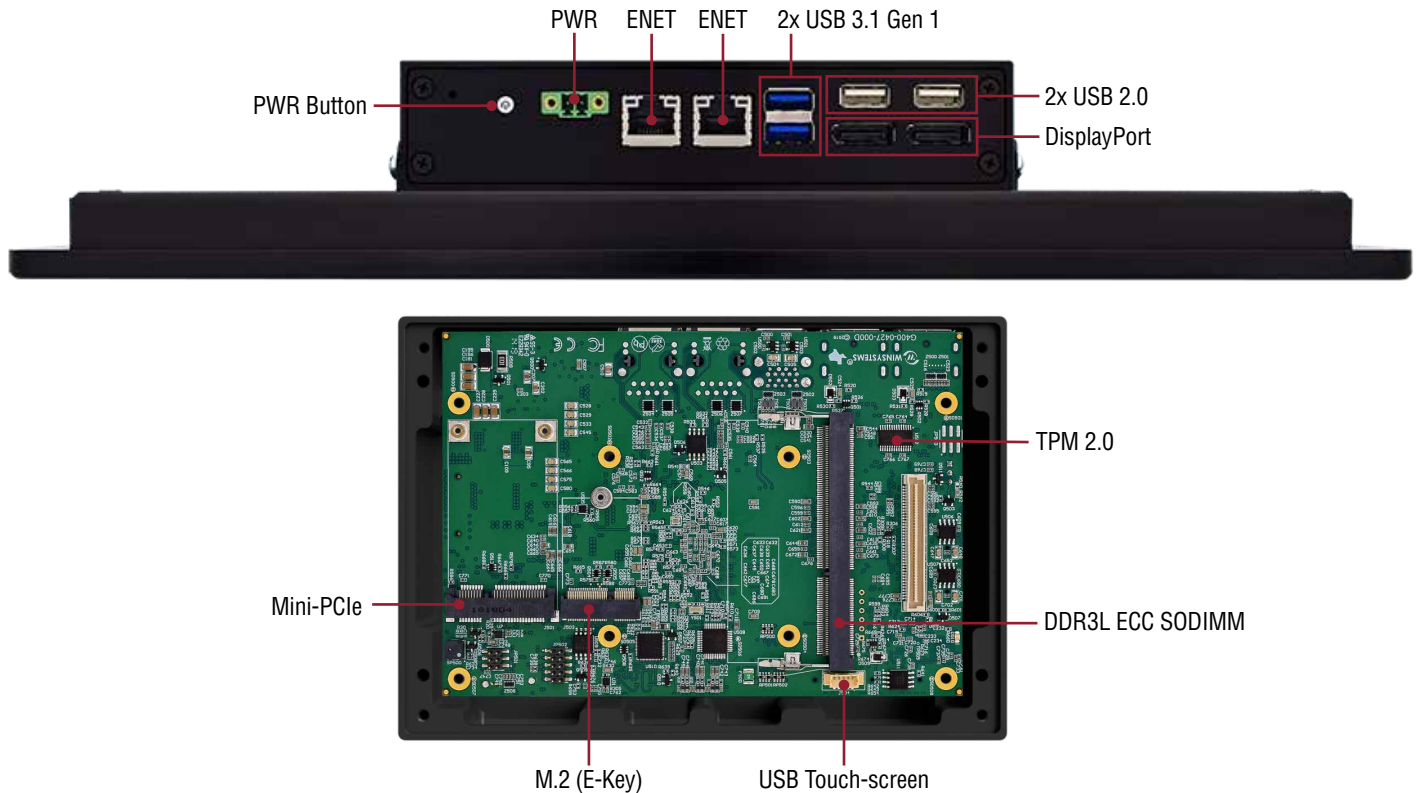


Block Diagram



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

Connectors



PPC12-427

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	<ul style="list-style-type: none"> SODIMM DDR3L ECC (up to 8GB) 		
STORAGE	<ul style="list-style-type: none"> eMMC SATA Connector mSATA 		
DISPLAY	<ul style="list-style-type: none"> Three independent video outputs <ul style="list-style-type: none"> LVDS with digital backlight and touch control output to 12.1-inch TFT-LCD panel PC 1024 x 768 at 60 Hz resolution, 4:3 aspect ratio 500 cd/m2 (nits) luminance 2x DisplayPort up to Ultra 4K Resolution (Front Panel I/O) 		
NETWORK INTERFACE	<ul style="list-style-type: none"> 2x Gigabit Ethernet ports (Front Panel I/O) 		
ONBOARD I/O	<ul style="list-style-type: none"> 1x Legacy RS232 Interface (8-wire) 2x Multi-Protocol Serial Ports (4-wire) 2x USB 2.0 ports 2x USB 3.0 ports (Front Panel I/O) 2x USB 2.0 ports (Front Panel I/O) 1x USB 2.0 for Touch Control to PCAP 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	<ul style="list-style-type: none"> 1x Mini-PCle card with mSATA support 1x M.2 connector 2230 (E-Key) WINSYSTEMS Modular IO80 Interface 		
SECURITY	<ul style="list-style-type: none"> Soldered down TPM 2.0 hardware security 		
POWER	<ul style="list-style-type: none"> Wide Input: +10 to 50 VDC 		
SOFTWARE	<ul style="list-style-type: none"> Compatible with Linux, Windows10, and other x86 operating systems 		
ENVIRONMENTAL	<ul style="list-style-type: none"> Operational from -30°C to +85°C (-40 to +185°F)¹ ¹ Requires airflow and high temperature grade DRAM RoHS compliant 		
COMPLIANCE	<ul style="list-style-type: none"> IP65, front panel and bezel FCC Class A CE Certified 		
MECHANICAL	<ul style="list-style-type: none"> Dimensions: 13.0 in. x 9.8 in. x 2.18 in. (330 mm x 250 mm x 55.6 mm) Weight: 5.25 lb (2.38 kg) Embedded Computer PC Board thickness: 0.078 inches 		

Order Information

PANEL PC PART NUMBER	PPC12-4273EMM-RT-P-I	PPC12-4274EMM-RT-P-I	PPC12-4275EMM-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	<ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> 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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