

Features

Performance for Industrial IoT Applications

- DMP® Vortex86DX3® Processor (Dual core)
- Up to 2 GB DDR3-LV System RAM
- 1 GHz
- Low Power
- 10 Year Availability

Rugged Design for Demanding Environments

- -40°C to +85°C Operating Temperature Range
- PC/104-Plus Small Form Factor
- Shock and Vibration Tested
- +5V Input Power
- Watch Dog Timer

Connectivity and I/O for Embedded Systems

- Dual Ethernet (1x Fast Ethernet, 1x Gigabit)
- 4x USB 2.0
- 24x GPIO 5V with Event Sense
- 4x Serial Ports (2x RS-232, 2x RS-232/422/485)
- Parallel Port LPT
- Audio

Graphics Support

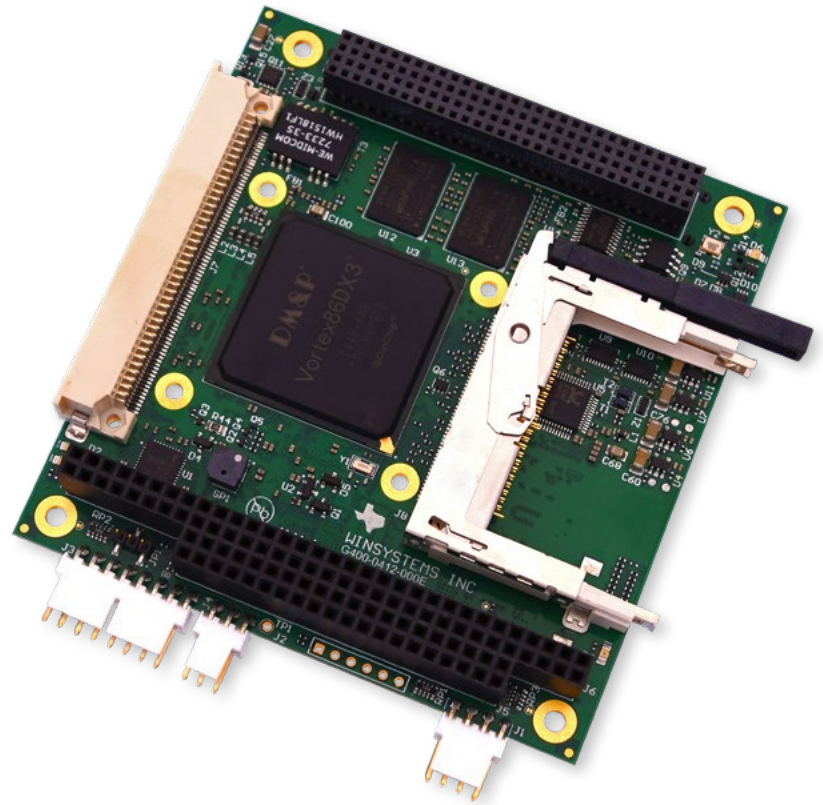
- VGA
- LVDS 1920x1440

Storage

- CompactFlash
- SATA

Expansion Options

- Full PC/104 ISA Support
- PCI-104



Product Description

WinSystems' PPM-C412 single board computer (SBC) is a PC/104-Plus form factor SBC featuring the latest generation DMP® Vortex86DX3® SOC processor. Its small size, low power, rugged design, and extended operational temperature make it a great fit for industrial IoT applications and embedded systems in the industrial control, transportation, Mil/COTS, and energy markets.

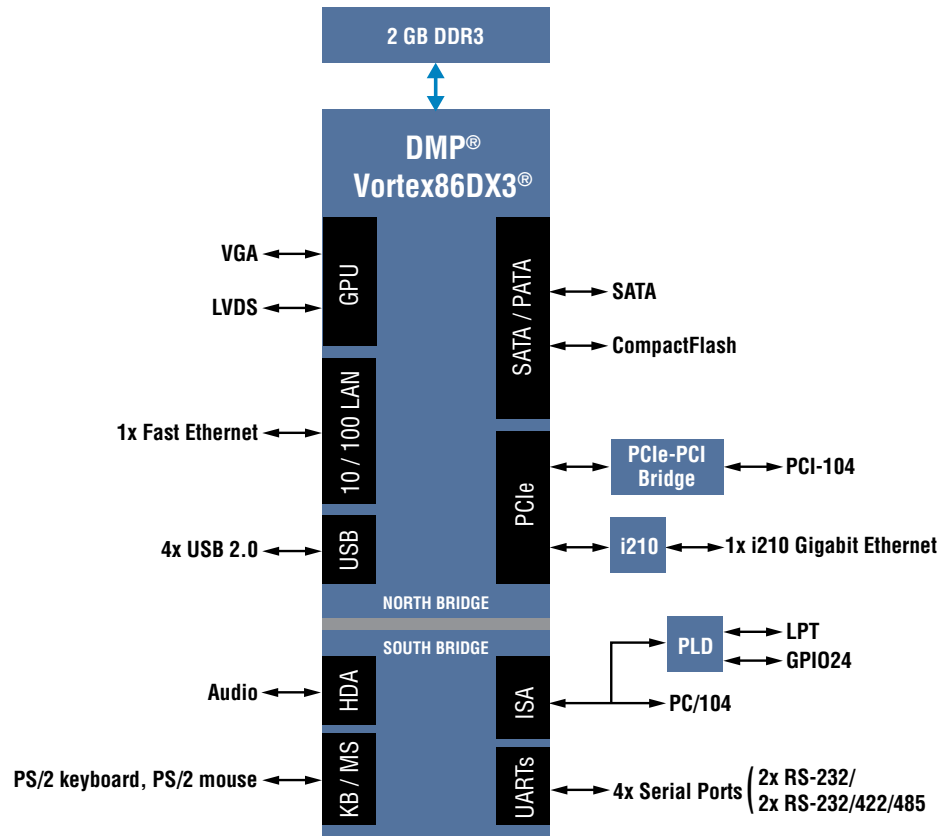
The WinSystems PPM-C412 single board computer features a 1GHz Dual Core CPU and up to 2GB of soldered down memory. The SBC includes a CompactFlash socket and external SATA connector for removable solid state storage of an operating systems (OS) and application.

This full-featured SBC includes PS2 mouse and keyboard support, VGA and LVDS video outputs, dual Ethernet, four USB 2.0 channels, one parallel port, 4 serial ports, 24 general purpose I/O (GPIO) lines, stereo audio, and a watchdog timer.

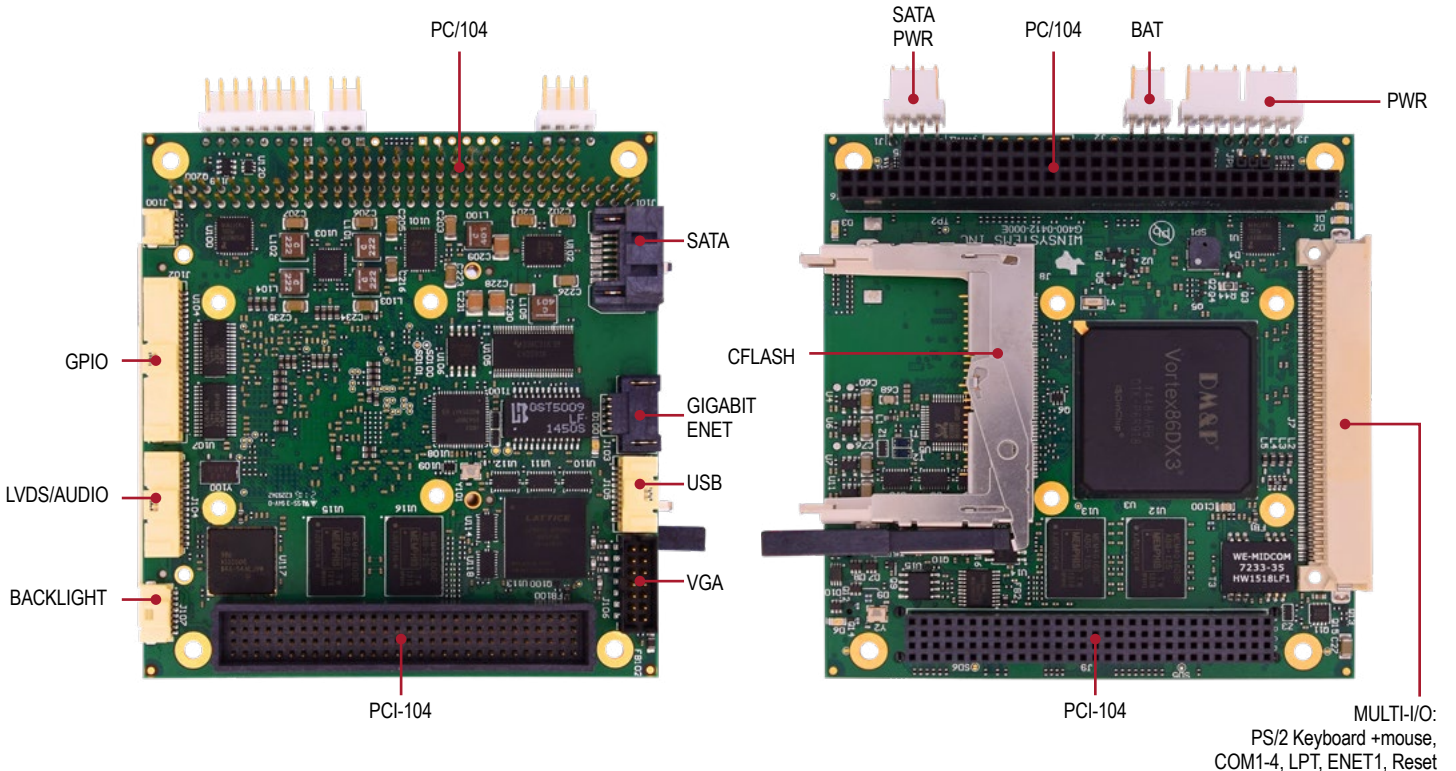
Additionally, the board has a PC/104-Plus expansion providing full native ISA bus support and PCI peripherals through a PCIe bridge.

The PPM-C412 supports Linux, DOS, and other x86-compatible real-time operating systems. Drivers are available from the WinSystems website.

Block Diagram



Connectors



Technical Specifications

PROCESSOR	DMP Vortex86DX3 Dual-core, up to 1 GHz	
OS COMPATIBILITY	<ul style="list-style-type: none"> Compatible with Linux, DOS and other x86 operating systems 	
MEMORY	<ul style="list-style-type: none"> Up to 2GB of DDR3LV soldered-down memory 	
BIOS	<ul style="list-style-type: none"> AMI BIOS 	
DISPLAY	<ul style="list-style-type: none"> Dual video output <ul style="list-style-type: none"> VGA LVDS with digital backlight dimmer 	
STORAGE	<ul style="list-style-type: none"> 1 SATA (2.0) channels CompactFlash Socket 	
NETWORK INTERFACE	<ul style="list-style-type: none"> Two Ethernet ports <ul style="list-style-type: none"> One 10/100/1000 i210 Gigabit One 10/100 Fast Ethernet 	
ONBOARD I/O	<ul style="list-style-type: none"> Four USB 2.0 with overcurrent protection Four 16C550-compatible, serial channels <ul style="list-style-type: none"> Two capable of RS-232/422/485 operation Two capable of RS-232 only 24 lines of general purpose I/O LPT Parallel Port supporting SPP/ECP/EPP Speaker output for beep tones Real-time Clock (RTC) with optional battery back up Watchdog timer adjustable from 1 second to 255 minutes Stereo audio output, line out, and mic in 	
EXPANSION BUS	<ul style="list-style-type: none"> PC/104 fully compatible native 16-bit ISA (8-16MHz) PCI-104 (33MHz) 	
POWER	+5V DC required Maximum: 1.6A / Typical: 1.2A	
ENVIRONMENTAL	<ul style="list-style-type: none"> Operational from -40 to +65°C (-40 to +149°F) with heat spreader (still air) Operational from -40 to +85°C (-40 to +185°F) with heat spreader (300 LFM airflow) RoHS compliant 	<ul style="list-style-type: none"> Operational from -40 to +80°C (-40 to +176°F) with additional heat sink (still air) Operational from -40 to +85°C (-40 to +185°F) with additional heat sink (200 LFM airflow) RoHS compliant
MECHANICAL	Dimensions: 3.6 x 3.8 inches (90 x 96 mm) Weight: 5.8 oz (163 gm) with heat spreader Board thickness: 0.078 inches	Dimensions: 3.6 x 3.8 inches (90 x 96 mm) Weight: 8.98 oz (255 gm) with heatsink Board thickness: 0.078 inches

Order Information

SBC PART NUMBER	PPM-C412D2-2-0-ST (with heat spreader) 1 GHz PC/104 SBC with Dual Ethernet, 2GB RAM	PPM-C412D2-2-1-ST (with heat spreader + heat sink) 1 GHz PC/104 SBC with Dual Ethernet, 2GB RAM
CABLES	<ul style="list-style-type: none"> CBL-SET-412-1 cable and accessories set includes: <ul style="list-style-type: none"> BAT-LTC-E-36-16-1 (External 3.6V, 1650 mAH battery with plug-in connector) CBL-ENET1-302-12A (Ethernet – RJ45 Female, 12") ADP-IO-USB-002 (Termination Board – USB, Dual Type A) CBL-251-G-1-1.5G (Multi-I/O: KYB, Mouse, Serial, LPT, Ethernet and Misc, 18") CBL-USB4-002-12B (Four USB ports with two 8-pin 2mm connectors) CBL-174-G-1-1.5E (Power) CBL-234-G-1-1.375C (VGA) 	
OPTIONAL BATTERY	<ul style="list-style-type: none"> BAT-LTC-E-36-16-1 (External 3.6 V, 1650 mAH) BAT-LTC-E-36-27-1 (External 3.6 V, 2700 mAH) 	

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 PC/104-Plus interfaces. Our engineers are available to guide you through product selection and customized options.



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