# 75PPC1 3U cPCI Single Board Computers
3U cPCI PowerPC SBC - QorIQ P2041

3U cPCI PowerPC SBC with two I/O and communications function module slots—
Over 100 different modules to choose from

NAI's 75PPC1 is a 3U cPCI NXP® QorIQ® P2041, PowerPC-based, Single Board Computer (SBC) that can be configured with up to two smart function modules. Ideally suited for rugged defense, commercial aerospace, and industrial applications, the 75PPC1 delivers off-the-shelf solutions that accelerate deployment of SWaP-optimized systems. NAI's NXP® PowerPC™ QorIQ® P2041-based SBCs offer a feature-rich, low power/low cost solution for current and future generations of rugged military-aero, SWaP-constrained embedded applications.

The 75PPC1 includes BSP and SSK support for Wind River® VxWorks®. In addition, SSKs are supplied with source code and board-specific library I/O APIs to facilitate system integration.
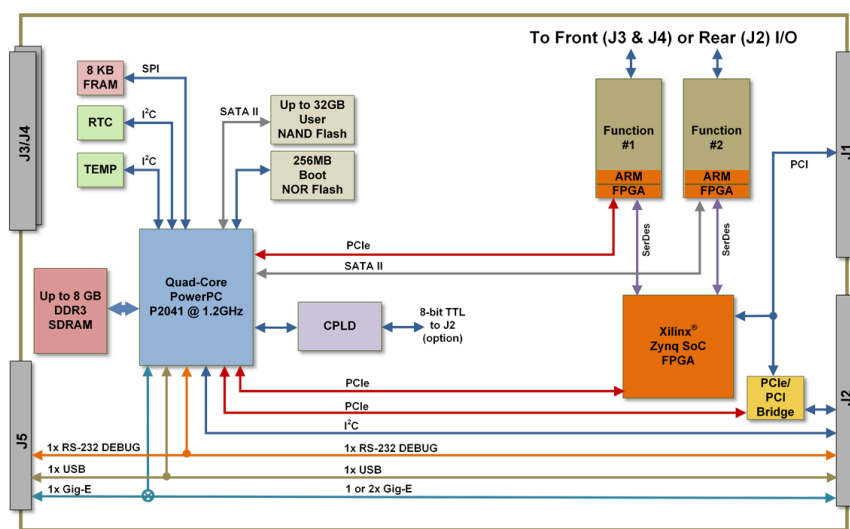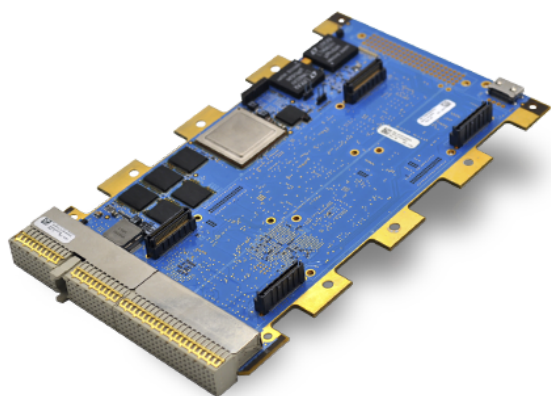
Features

- Freescale™ QorIQ® P2041 Quad Core e500mc Processor @ 1.2 GHz
- Up to 8 GB DDR3 SDRAM
- Up to 32 GB SATA II NAND Flash (256 GB expansion option in slot #2)
- PCIe interface to function module slot 1 for 2 additional Gig-E ports
- < 25 W MB power dissipation

- COSA® Architecture
- 100+ modules to choose from
- Up to 2 independent smart I/O function modules supported
- Independent x1 SerDes interface to each function module slot
- Front and/or rear I/O
- 2x 10/100/1000 Base-T Ethernet; 2 to rear or 1 to rear and 1 to front I/O
- 2x USB 2.0, 1 to front and 1 or 2 to rear I/O
- 1x RS-232 to front or rear I/O
- 8x TTL I/O to rear I/O
- I2C Bus to rear I/O

- Wind River® Linux or VxWorks® OS Support
- Continuous Background Built-in-Test (BIT)
- Intelligent I/O library support included
- VICTORY Interface Services (Contact factory)
- Commercial or rugged applications
- Operating temp: 0° C to +70° C or Rugged -40° C to +85° C

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Select up to 2 independent functions for your application

Measurement & Simulation Modules

Function	Module	Description	Function	Module	Description
AC Reference	AC2	2 CH. AC Reference Source, 47 Hz - 20 KHz, ± 3% Acc, 2 – 28 Vrms, 3 VA (Max/Ch) Power	LVDT RVDT Measurement and Simulation	LD4	4 CH. LVDT/RVDT to Digital, 2-28 Vrms Input, 2-115 Vrms Exc, 10 KHz - 20 KHz Freq
	AC3	2 CH. AC Reference Source, 47 Hz - 2.5 KHz, ± 3% Acc, 28 – 115 Vrms, 3 VA (Max/Ch) Power		LD5	4 CH. LVDT/RVDT to Digital, 28-90 Vrms Input, 2-115 Vrms Exc, 47 Hz - 1 KHz Freq
LVDT RVDT Measurement and Simulation	LD1	4 CH. LVDT/RVDT to Digital, 2-28 Vrms Input, 2-115 Vrms Exc, 47 Hz -1 KHz Freq	Thermocouple and RTD Measurement	RT1	8 CH. Resistance Temperature Detectors (RTD), 2, 3, or 4 wire, 16 Bit Res, 16.7 Hz/Ch
	LD2	4 CH. LVDT/RVDT to Digital, 2-28 Vrms Input, 2-115 Vrms Exc, 1 KHz - 5 KHz Freq		TC1	8 CH. Thermocouple, 4.17 - 470 Hz, ±100 mV A/D
	LD3	4 CH. LVDT/RVDT to Digital, 2-28 Vrms Input, 2-115 Vrms Exc, 5 KHz - 10 KHz Freq	Strain Gauge Measurement	SG1	4 CH. Strain Gauge, 4.7 Hz - 4.8 KHz, Measurement, Conventional 4-Arm Bridge

I/O Modules

Function	Module	Description	Function	Module	Description
Analog-to-Digital	AD1	12 CH. A/D, ±10 V, Dedicated, 256 kHz (max), Sigma-Delta	Digital IO - Differential Transceiver	DF2	16 CH. 16 Channel Enhanced Differential I/O
	AD2	12 CH. A/D, ±100 V (max), Dedicated, 256 kHz (max), Sigma-Delta	Discrete IO - Multichannel,Programmable	DT1	24 CH. Discrete I/O, 0-60 VDC Input/Output, Max Iout 500 mA - 2 A, Source/Sink (out)
	AD3	12 CH. A/D, ± 100 V, Dedicated, 200 KHz, Sigma-Delta		DT2	16 CH. Discrete I/O, ±80 V Input/Output, Max Iout 600 mA, Isolated/Ch Switch (out)
	AD4	16 CH. A/D, ± 10 V, Multiplexed, 500 KHz Agg / 8 Ch, SAR		DT3	4 CH. Discrete I/O, ±100 V Input/Output, Max Iout 3A, Isolated/Ch Switch/Bridge
	AD5	16 CH. A/D, ± 50 V, Multiplexed, 500 KHz Agg / 8 Ch, SAR		DT4	24 CH. Enhanced DT1
	AD6	16 CH. A/D, ± 100 V, Multiplexed, 500 KHz Agg / 8 Ch, SAR		DT5	16 CH. Enhanced DT2
Digital-to-Analog	DA1	12 CH. D/A, ± 10 V, 25 mA Per Channel, Current or Voltage Control	Relay	RY1	4 CH. Relay, 220 V / 2 A (Max), 60 W/62.5 VA, Non Latching
	DA2	16 CH. D/A, ± 10 V, 10 mA Per Channel, No Current Control		RY2	4 CH. Relay, 220 V / 2 A (Max), 60 W/62.5 VA, Latching
	DA4	4 CH. D/A, ± 20 to ± 80, 10 mA, Voltage Control Only	Digital IO - TTL,CMOS	TL1	24 CH. TTL I/O, Standard Functionality, Programmable
Digital IO - Differential Transceiver	DF1	16 CH. Differential I/O, Input: -10 V to +10 V (422), -7 V to +12 V (485) Output: -.25 V to +5 V		TL2	24 CH. TTL I/O, Enhanced Functionality, Programmable

Communication Modules

Function	Module	Description	Function	Module	Description
ARINC Communications	AR1	12 CH. ARINC 429, 100 KHz or 12.5 KHz, RX/TX, 256 Word Tx/Rx Buffer	Serial Communications	SC1	4 CH. Serial, RS-232/422/423 (MIL-STD-188C)/485, Non Isolated
CANBus Communications	CB1	8 CH. CANBus, CAN 2.0 A/B, 16 K RX/TX Buffer, 1 Mb/s Max Data Rate		SC2	4 CH. Serial, RS-232/422/423 (MIL-STD-188C)/485, Isolated Per Channel and From Ground
	CB2	8 CH. CANBus, J1939, 16 K RX/TX Buffer, 500 kb/s Max Data Rate		SC3	8 CH. RS-232/422/485 Async Serial Comms or GPIO, Programmable, Tx/Rx Only, Non Isolated
	CB3	8 CH. CANBus, CAN 2.0 A/B (CB1) or J1939 (CB2) protocol layer programmable per channel		SC7	4 CH. Serial, RS-232/422/423 (MIL-STD-188C)/485, Non-Isolated w/ (4) SYS-GND pins provided
Ethernet NIC Interface	EM1	2 CH. Dual Ethernet I/F, Intel 82850, 10/100/1000			

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Architected for Versatility

NAI's Configurable Open Systems Architecture™ (COSA®) offers a choice of over 100 smart I/O, communications, or Ethernet switch functions, providing the highest packaging density and greatest flexibility of ruggedized embedded product solutions in the industry. Preexisting, fully-tested functions can be combined in an unlimited number of ways quickly and easily.

One-Source Efficiencies

Eliminate man-months of integration with a configured, field-proven system from NAI. Specification to deployment is a seamless experience as all design, state-of-the-art manufacturing, assembly and test are performed - by one trusted source. All facilities are located within the U.S. and optimized for high-mix/low volume production runs and extended lifecycle support.

Product Lifecycle Management

From design to production and beyond, NAI's product lifecycle management strategy ensures the long-term availability of COTS products through configuration management, technology refresh and obsolescence component purchase and storage.

Made in the USA
Certified Small Business

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