

# PC104p-429-4/8



4 or 8 Channel ARINC429

Interface Module for PC/104+



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product guide



## General Features

The PC104p-429 module is a rugged, reliable, full featured, PC/104+ module designed to provide a stand-alone, flight ready ARINC429 interface for avionics applications. Up to eight ARINC429 channels are provided on the PC104p-429 module. Each channel can be individually configured as Transmit or Receive and to operate at the high or low bit rates defined by ARINC429. Additionally, the PC104p-429 offers full functional test, simulation, monitoring and databus analyser functions for ARINC429 test and simulation applications.

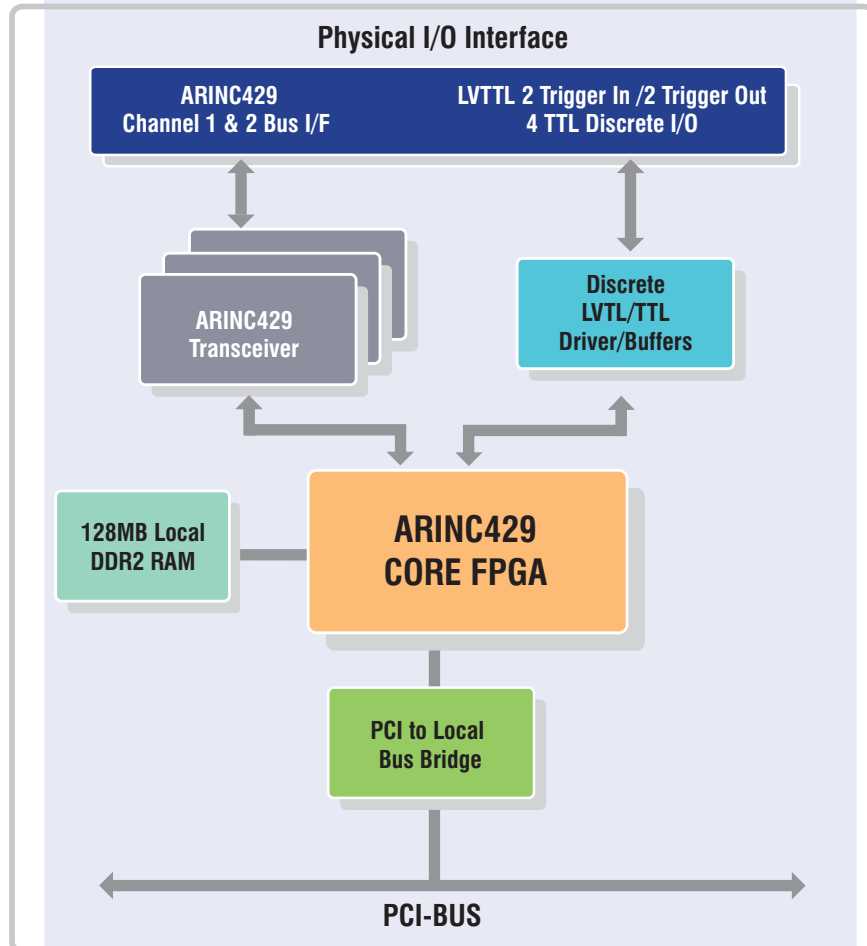
The PC104p-429 modules utilise a simple and reliable FPGA based hardware architecture with a flexible platform that provides the highest data throughput performance in the industry and that can be easily adapted to meet a wide range of application needs. The PC104p-429 cards are configured with 128 MBytes of onboard memory, providing ample capacity to supports high volumes of data and complex simulations.

Four fully software programmable (as input or output) TTL discrete I/O lines are provided. TTL voltage levels can be externally set up to 30 Volts. Additionally, two input trigger and two output trigger (LVTTTL) lines are provided.

Application software can access the PC104p-429 modules via AIM's common ARINC429 C/C++ Object Wrapper Layer (OWL) high level application programmer's interface..



PC104-429  
Functional  
Block Diagram



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## Transit Channel Operation

The PC104p-429 provides real-time simulation of up to eight ARINC429 Transmitter Channels concurrently. Bit transmission rates and duty cycles are selectable for each channel, and the 12.5 kbits/sec and 100 kbits/sec transmit modes are supported.

Associated rise and fall times are in accordance with the ARINC429 electrical specification.

- *Rate Oriented, Block, and Acyclic Label Transmission modes support all simulation needs*
- *Error injection for each Label Transfer: short gap, parity, bit count, coding*
- *Programmable gaps between Labels*

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## Receiver Channel Operation

The PC104p-429 provides real-time simulation of up to eight ARINC429 Receiver Channels concurrently.

- *Label/SDI selective receive, sequential receive modes*
- *Multi-buffering with real-time data buffer updates*
- *Triggering and filtering*
  - *Upper and lower limit check*
  - *Trigger on specific or any error*
  - *Label content and sequential dependent trigger*
  - *Label selective and label data contents dependent filter*
- *Label selective and label data contents dependent interrupts*

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## Discrete I/O

The PC104p-429 modules provide four fully programmable (as input or output) discrete lines. Each discrete line is capable of TTL signalling. Additionally, output lines can drive up to 30V signals with an external supply, and input lines are able to accept up to 30V signals.

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## Driver Software

The PC104p-429 modules are supplied with Board Support Packages (BSP) for Windows 2000/XP/Vista, Linux, or various embedded real-time systems (VxWorks, Green Hills, LynxOS, ...) upon request. Drivers, sample code, high level C and C++ interface libraries, and documentation are provided.

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## Physical Bus Interface

PC104p-429 cards have integrated ARINC429 line transmitter/receivers programmable by software for Receive (Rx) or Transmit (Tx) mode and selectable transmission rate for each channel independently.

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## Physical Bus Replay

The PC104p-429 module is able to electrically reconstruct previously recorded ARINC429 data traffic physically to the bus with excellent timing accuracy. Recorded data files can be selected for physical bus replay to perform systems integration and test with the ability to disable any or all ARINC429 labels from the recorded file.



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## Application Interface

In support of application program interfaces to the PC104p-429, the modules are supplied with AIM-USA's ARINC429 Object Wrapper Layer (OWL) C and C++ interface library. The ARINC429 OWL provides an intuitive and easy to use object oriented interface to the module. Adaptations supporting C#, Python, and other common programming languages are available upon request. A rich suite of sample applications and full documentation is provided.

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Right on Target

## Technical Data

**System Interface:** 32-bit 33MHz PCIbus (Rev 2.2) compliant, Universal, 3.3V and 5V, operation

**Memory:** 128 MByte DDR2 SDRAM

**Encoder/ Decoder:** Up to eight Encoders/Decoders with Error Injection and Detection

**Physical Bus Interface:** Up to eight fully and independent software programmable, as Tx or Rx, ARINC429 channels.

**Time Tagging:** Absolute time tagging with 1 usec resolution: 25 bits (seconds) + 20 bits (microseconds)

**Connectors:** Standard PC/104-Plus J3 Stackable PCI Bus Connector (4x30)  
Standard PC/104 J1 & J2 ISA Bus Connectors (2x32, 2x20)  
ARINC429/Discrete/Trigger/IRIG-B Connector (2 x 20 Samtech ETH-120-01-S-D-RA)

**Dimensions:** PC/104-Plus Specification V2.2 compliant (3.575 X 3.775 in.)

**Power Consumption:** TBD

**Operating Temp. Range:** Standard -40° C...+85° C ambient

**General Purpose I/O:** Four software programmable TTL I/O lines supporting up to 30V signalling with external reference Four trigger LVTTTL Trigger I/O lines (Two Output / Two Input)

## Ordering Information

### PC104p-429-4, PC104p-429-8

4 or 8 - Channel ARINC429 to PC/104+ Module.

Software Programmable Receiver/Transmitter Channels.

IRIG-B Time Code. 128 MByte Onboard RAM.

### -XT

Add for extended temperature operation

Note: The PC104p-429 modules are designed for extended temperature operations. If the option is selected, the module is individually tested for operation over the extended temperature range prior to shipment.

### -CONF

Add for conformal coating