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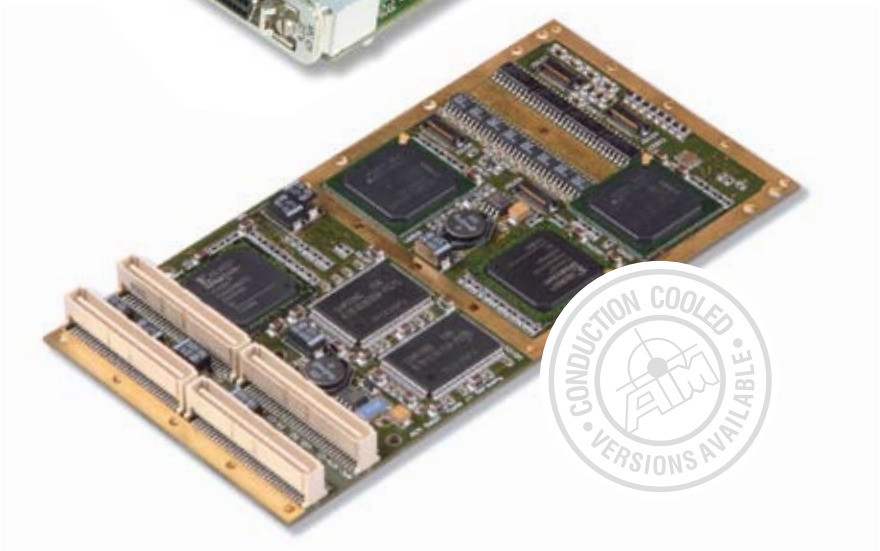
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AIM-USA

AMC429

4, 8, 16 or 32 Channel ARINC429 Test & Simulation Modules for PMC





data sheet

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AMC429

4, 8, 16 or 32 Channel ARINC429 Test & Simulation Modules for PMC

General Features

The AMC429 family of PCI Mezzanine (PMC) modules offer full function test, simulation, monitoring and databus analyzer capabilities for ARINC429 applications on up to 32 channels concurrently.



Conduction Cooled (CC) Modules are also available for the AMC429 family. The AMC429 CC modules meet the ANSI/VITA 20-2001(R2005) standard. (See Ordering Information)

4 channels are available on the AMC429-4, 8 channels on the AMC429-8 & 16 channels on the AMC429-16 module. All channels are software programmable for Receive (Rx) or Transmit (Tx) mode.
The AMC429-4/ 8/ 16 also supports up to 8 discrete input & 8 discrete outputs which can be monitored or generated.

For the AMC429-32 the lower 16 channels are software programmable for Receive (Rx) or Transmit (Tx) mode whilst the upper 16 channels are configured either with fixed Receivers (model AMC429-32R16) or fixed Transmitters (model AMC429-32T16). This gives the users maximum flexibility for high density ARINC429 test rigs or test benches. An on-board IRIG-B time code decoder and generator allows users to accurately synchronize single or multiple AMC429 modules to a common time source.

The AMC429 modules use AIM's field proven 'Common Core' hardware design utilising multiple RISC processors whereby all channels can operate concurrently at ARINC429 high or low bit rates with the intelligence to process data in real time.

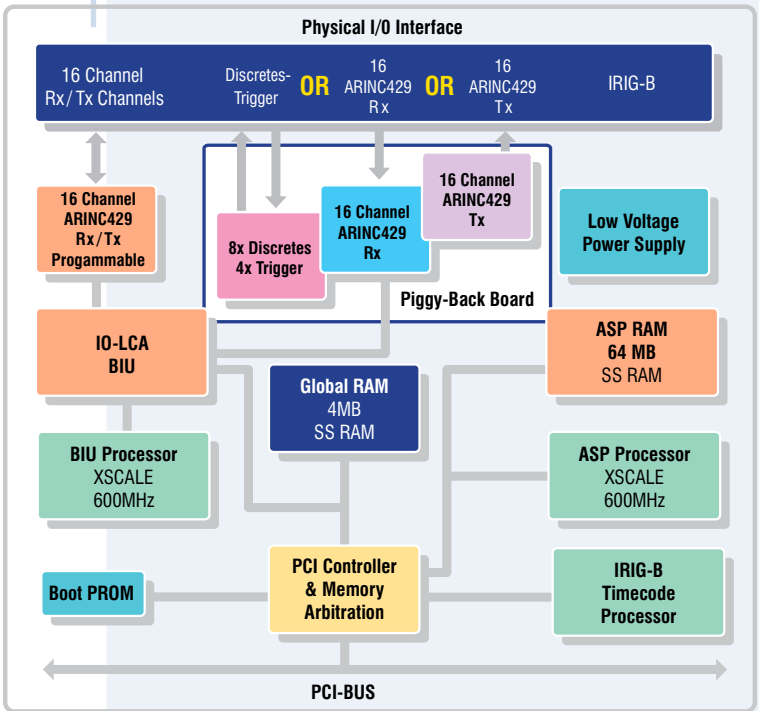
The use of an Application Support Processor (ASP) executing the driver software allows users specific test routines to be processed onboard, significantly off-loading the host processor. This advanced concept allows users to implement system level functionality on a single PMC interface card. The AMC429 cards are configured with 4Mbyte of global memory and 64Mbytes of ASP memory



Supported options for all versions of AMC429 cards include:

- *Rear I/O*
- *Conduction Cooling/ Conformal Coating for Embedded applications*
- *Extended Temperature Range*

The AMC429 modules operate with the optional PAA-429/ ParaView Databus Analyzer Software for Windows and new PBA.pro™ Databus Test & Analysis Tool for Windows and Linux.



AMC429
4, 8, 16 & 32
Block Diagram

Transmit Channel Operation

AMC429 modules provide real time simulation of up to 32 ARINC429 Transmitter Channels concurrently controlled by the on-board RISC Processor via instruction lists. Transmission rates are selectable for each channel at 12.5 kbits/sec or 100 kbits/sec with the associated rise/fall time in accordance with the ARINC429 electrical specification.

- *Cyclic/Acyclic Label Transmission Mode & support for File Transfer Protocols*
- *Error Injection for each Label Transfer: Short Gap, Parity, Bit Count, Coding*
- *Programmable Gap between Labels: 0 to 255 Bits*
- *Transmit Operation Controlled by Instruction Lists*
- *Comprehensive Instruction Set: JUMP, CALL, COND-JUMP, TRANSFER*

Receiver Channel Operation

AMC429 modules provide real time monitoring of up to 32 ARINC429 Receiver Channels concurrently controlled by an on-board RISC Processor.

- *Triggering and Filtering*
- *Upper & Lower Limit Check*
- *Trigger on Specific or on any Error*
- *Label Content & Sequential Dependant Trigger*
- *Label selective & Label Data Contents Dependant Interrupt*
- *Label selective & Label Data Contents Dependant Filter*
- *Multi-Buffering with Real Time Data Buffer Updates*

Discretes

For monitoring and control of an external application 16 off Discrete Input/Output ports with a wide range voltage characteristic are provided for customised use.
The 8 Inputs/ 8 Outputs discrete signal ports are software controllable by the application programme. (this feature is not available for the AMC429-32 version)

- *8 discrete Inputs in the range of 3.3... 30 VDC*
- *8 discrete open collector Outputs up to 30 VDC*
- *Fused 5 VDC provided for open collector supply*





Application Support Processor

A 600 MHz Application Support Processor ASP provides unique on-board processing functions typically provided by host processing systems.

- *Driver Software Execution on the board*
- *Dynamic Data Generation*
- *Automatic Test Sequence Generation*

Physical Bus Interface

AMC429 cards have integrated ARINC429 line Transmitter/ Receivers and selectable Transmission rate for each channel independently. All ARINC429 channels are available at the front plate output connector or at the Rear-I/O connector. (For Conduction Cooled Modules, all IO-signals are routed to the 64 pin Rear IO PMC connector.)

Physical Bus Replay

The AMC429 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.

IRIG-B Time Code Decoder

AMC429 cards have an on-board 'IRIG-B' time code decoder and generator with a sinusoidal output and free wheeling mode for time tag synchronisation.
This allows synchronisation of multiple AMC429 cards to one common IRIG-B time input source or to the on board Time Code generator of one AMC429 card as the reference for the correlation of data across multiple ARINC429 channels.

Driver Software

The AMC429 modules are supplied with an Application Programming Interface (API) and Driver Software compatible with WIN 2000/XP, LabVIEW/VI's, & LabWIN/CVI's, Linux & VxWorks.

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4, 8, 16 or 32 Channel ARINC429 Test & Simulation Modules for PMC

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Technical Data

System Interface: : 64 Bit / 33MHz PCIbus (Rev. 2.2) compliant

Processors: 2 x 600MHz RISC Processors

Memory: 4MByte Global RAM, 64MByte ASP RAM

Encoder/Decoder: Up to 32 Encoder/Decoders with Error Injection and Detection

Time Tagging: 46 Bit absolute IRIG-B Time, 1μsec resolution

Physical Bus Interface: Up to 32 ARINC429 Transmitters and 32 ARINC429 line Receivers for a total of 32 Channels. The lower 16 channels are user programmable RX or TX, with the upper channels being fixed as RX or TX.
On AMC429-4/8/16 Discretes and Triggers are included replacing the upper 16 ARINC429 Channels

Connector: 68 pin, Mini D-Sub. Signals are also available at Rear-I/O connector.
4 x Standard PMC Connectors.
AMC429-CC Modules have Rear IO 64 Pin PMC Connector Only

Dimensions: 149mm x 74mm Standard PMC Format

Power Consumption: 11 Watts typical

Operating Temp. Range: Standard 0°C ...+70°C ambient
Extended -40°C... +85°C ambient
Conduction cooling available

Storage Temp: -40°C ...+ 85°C ambient

Ordering Information

AMC429-4, -8, -16 (-CC)
4, 8 or 16 Channel ARINC429 to PMC Module
Software Programmable Rx/ Tx Channels
IRIG-B Time Encoder/ Decoder, 4MByte Global RAM,
8 Discrete Inputs, 8 Discrete Outputs
On-Board ASP with 64Mbyte RAM

AMC429-32R16 (-CC)
32 Channel ARINC429 to PMC Module
16 Software Programmable Rx/ Tx Channels plus 16 dedicated Rx Channels
IRIG-B Encoder/ Decoder, 4MByte Global RAM
On-Board ASP with 64Mbyte RAM

AMC429-32T16 (-CC)
32 Channel ARINC429 to PMC Module
16 Software Programmable Rx/ Tx Channels plus 16 dedicated Tx Channels
IRIG-B Encoder/ Decoder, 4MByte Global RAM
On-Board ASP with 64Mbyte RAM

ACC429-3U-X
ARINC429 to CPCI Module comprising any variation of AMC429 installed on an ACC-1, 3U Carrier Card
X= {4, 8, 16, 32R16, 32T16}

ACP429-X
ARINC429 to PCI Module comprising any variation of AMC429 installed on the ACP-1 Carrier Card
X= {4, 8, 16, 32R16, 32T16} Y= {4, 8, 16, 32R16, 32T16}

ACC429-6U-X-Y
ARINC429 to CPCI Module comprise any variation of AMC429 installed on the ACC-2, 6U Carrier Card
X= {4, 8, 16, 32R16, 32T16} Y= {4, 8, 16, 32R16, 32T16}

AVC429-X-Y
ARINC429 to VME Module comprising any variation of AMC429 installed on the AVC-2 Carrier Card
X= {4, 8, 16, 32R16, 32T16} Y= {4, 8, 16, 32R16, 32T16}

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