

# RAR-429 SERIES

## ARINC 429 INTERFACE CPCI CARD

- Eight or sixteen Tx/Rx ARINC 429 channels
- Sixteen bi-directional discretes
- Programmable data rates
- Error injection & detection
- IRIG-B synchronization



## DESCRIPTION

The RAR-429 module is a rugged, reliable, full featured, CompactPCI module designed to provide a stand-alone, ARINC 429 interface for avionics applications. Up to 16 ARINC429 channels are supported on a 3U CompactPCI module. The RAR-429 offers full functional test, simulation, and monitoring for ARINC 429 test and simulation applications.

## FEATURES

The RAR-429 modules offer complete, integrated data bus functionality for the ARINC 429 protocol, Maximum data throughput is supported on all channels while providing on-board message scheduling, label filtering, multiple buffering options, time-tagging, and error detection. In addition, IRIG-B Receiver (AM or DC/TTL) and Generator (DC/TTL) capabilities are supported. Both transmit and receive data rates are programmable over range from 5 kHz to 150 kHz.

## ARCHITECTURE

The RAR-429 series offers independent, software programmable data rates and parity, error detection and automatic transmit channel slew rate adjustment. All channels operate independently, with 2 MBytes of on-board RAM providing large transmit and receive data buffers. The 16 discrete I/Os support an input voltage range from TTL to 50 volts. When configured as outputs, the open drain configuration can sink up to 0.5 amps.

## DATA HANDLING

On-board firmware, large data buffers and a high-level offer total flexibility for monitoring and generating ARINC bus traffic. Simultaneous Scheduled and Burst Mode (FIFO) messaging is supported on all ARINC 429 transmit channels. Each ARINC 429 receive channel provides simultaneous Dedicated and Buffered Mode storage, along with label/SDI filtering. Three different methods are provided for buffering received data:

- Buffered Mode utilizes a separate circular buffer for each channel.
- Merged Mode combines all received data into a single, time-sequenced circular buffer.
- Dedicated Mode provides a snapshot of the current received data.

## SOFTWARE

The RAR-429 module is supplied with an API for Windows 2000/XP/ME/ Win 7. An ATEasy driver, sample code, high level C and C++ interface libraries, and documentation is provided. Support for LabVIEW is also available.

## APPLICATIONS

- Automatic Test Equipment (ATE)
- LRU and SRU test
- System level test

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## SPECIFICATIONS

TIMING	
System Interface	32-Bit, 66 / 33 MHz PICMG 2.0 R3 compliant
Memory	2 MB of RAM for data buffers
Encoder / Decoder	Up to 32 Encoders/Decoders with Error Injection and Detection per PMC module
ARINC429 Interface	Up to 16 ARINC 429 Transmitters and 16 ARINC 429 Receivers
Data Rate	Programmable: High and low bit rate (100 Kb/s & 12.5 Kb/s) or programmable from 5 kHz to 150 kHz
Transmit / Receive Message Buffer	2048 message buffer for each Tx & Rx channel; 64-bit, 1 usec time-tag stored with each receive buffer operation
Error Injection	Parity, Gap, High or low bit count
Parity (Transmit & Receive)	Odd, Even, or None
Error Detection	Parity
Transmit Output Level	±10 V (differential)
Receive Input Level	±6.5 V to ±13 V (differential)
DISCRETE INPUTS / OUTPUTS	
Number of Discrete I/O	16, bidirectional
Input Threshold	2.7 V, ±0.2 V
Output Characteristics	Open drain, N-channel FET 0.5 A (max) current, 50 V (max), Drain to source voltage
IRIG-B GENERATOR / RECEIVER	
IRIG-B Generator Time Register	30 bit, IRIG-B time range with 1 usec resolution
IRIG-B Sample Timestamp	64 bit IRIG-B time range with 1 usec resolution
Supported IRIG-B Formats	Modulation: 0, 1 Frequency / resolution: 0, 2 Coded expressions: 0, 1, 2, 3
Receiver	IRIG timecode: B AM sinewave or DC/TTL modulation

Transmitter	IRIG timecode: B Format: B002 (DC/TTL) Output drive: ±16 mA @ TTL levels
PHYSICAL	
Interface Connector	(2) 50 pin Amp Champ , 0.8 mm receptacle connector P1: Tx/Rx 1 - 8, discretes 1 - 8 P2: Tx/Rx 9 - 16 , discretes 9 - 16
Size	3U, single slot cPCI modules
Power Consumption	+3.3 V @ 500 mA +5 V @ 50 mA +12 V @ 350 mA -12 V @ 350 mA Sixteen transmitters, max data rate, 400 ohm load per channel
Operating Temp	0 °C to +70 °C
Humidity	5% to 95% non-condensing
Weight	3.6 ounces, max

Note: Specifications are subject to change without notice

## ORDERING INFORMATION

<b>RAR-429-8</b>	3U cPCI, 8 channel Tx / Rx ARINC 429 card
<b>RAR-429-16</b>	3U cPCI 16 channel Tx / Rx ARINC 429 card

Note: The RAR-429 Series is supplied by a 3rd party and resold by Marvin Test Solutions.