



# RAR-MPCIE

## ARINC High Density Mini PCI Express Interface

### Hardware

Available in a range of configurations to match your needs, the RAR-MPCIE provides complete, integrated databus functionality for ARINC 429, ARINC 575 and selected 2-wire, 32-bit protocols. The RAR-MPCIE supports maximum data throughput on all channels while providing onboard message scheduling, label filtering, multiple buffering options, time-tagging, error detection and avionics-level I/O discretes.

Two RAR-MPCIE configurations offer combinations of ARINC 429 channels along with ARINC 717/573 Dual-Mode functionality. Dual-Mode functionality programmatically supports either HBP (Harvard Bi-Phase) or BPRZ (Bi-Polar Return to Zero) across a very wide range of bit rate/subframe combinations.

The RAR-MPCIE comes as standard with IRIG-B DC level signal and can be utilized to synchronize time stamps across multiple boards.

The RAR-MPCIE is very small in size (30mm x 50.95mm x 4.7mm) and is lightweight for applications deployed in highly-constrained environments where platforms require minimum SWaP solutions.

### Architecture

The RAR-MPCIE features include independent, software programmable data rates and parity, error detection. 2 MBytes of on-board RAM provide large transmit and receive data buffers. All channels operate

independently. Discretes support TTL to four avionics-level inputs and four outputs while open-drain outputs enhance (bi-directional) application flexibility.

### Software

Abaco Systems' software tools and solutions significantly reduce the time required to integrate ARINC 429 and other avionics protocols into your application. Included with the RAR-MPCIE is our flexible, high-level, API (Application Programming Interface) support for Microsoft Windows 7, 8, 8.1, 10, Server 2012 R1/R2, Vista, XP (32-bit/64-bit), VxWorks and Linux. Our powerful API supports multiple cards, and is compatible with Abaco Systems API support on PCI, PCIe, PMC, PC/104-Plus, Express Card, AMC and Compact PCI platforms. Optional software includes LabVIEW.

### Data Handling

On-board firmware, and a high-level API are integrated to provide total flexibility in 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 to buffer 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 latest data.

### FEATURES:

- Up to eight Rx and four Tx ARINC 429 channels
- High performance, high density interface with large buffers
- Advanced, high-level software API included for Microsoft® Windows® 7, 8, 8.1, 10, Server 2012 R1/R2, Vista, XP (32-bit/64-bit), VxWorks and Linux®
- Supports maximum data throughput on all channels simultaneously
- 4-input/output bi-directional discretes supporting avionics-level voltages
- Independent, software-programmable bit rates for all channels
- Error injection/detection
- Support for 2-wire ARINC 573, 575, and 717
- IRIG-B Receiver/Generator standard

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### Specifications

#### ARINC 429 Receive Channels

- Number of channels: up to 8
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 150 KHz programmable
- Standard input levels:  $\pm 6.5$  to  $\pm 13$  VDC (A to B)
- Filtering: label and/or SDI
- Parity: odd, even or none
- Error reporting: parity

#### ARINC 429 Transmit Channels

- Number of channels: up to 4
- Data rates: 12.5 KHz, 100 KHz or 5 KHz to 150 KHz programmable
- Output level:  $\pm 10$  VDC typical (A to B)
- Parity: odd, even or none
- Error injection option: parity, gap, high or low bit count

#### Discrete Inputs and Outputs

- Number of inputs: 4
- Supports monitoring of TTL/CMOS/Avionics level voltages
- Number of outputs: 4
- Low side switches, each capable of sinking 200ma

#### Optional Configurations

- A wide range of Rx/Tx combinations
- ARINC 573/717 Bi-Polar RZ and Harvard Bi-Phase
- Optional acrylic conformal coating
- Optional rugged high retention I/O connector
- Optional I/O transition cabling
- Contact factory for custom configurations

#### Power (typical)

- +3.3 VDC @ 1.05 A (typ.)
- 1.82 W power dissipated on board
- Weight 8.6 grams

#### Software

- Advanced, high-level software API included for Microsoft Windows 7, 8, 8.1, 10, Server 2012 R1/R2, Vista, XP (32-bit/64-bit), VxWorks and Linux (please check latest support versions with sales)
- Labview for Windows operating systems

#### Physical

- Mini PCI Express interface card (30mm x 50.95 mm x 4.7mm)
- Operation Temperature range -40°C to +85°C
- Storage Temperature range -50°C to +100°C
- Relative humidity: 5 up to 95% (non-condensing)

### Ordering information

<b>RAR-MPCIE-22</b>	ARINC 429 INTELLIGENT 1 LANE MINI PCI EXPRESS CARD WITH 2 RX, 2 TX CHANNELS, 4 DISCRETES, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>RAR-MPCIE-42</b>	ARINC 429 INTELLIGENT 1 LANE MINI PCI EXPRESS CARD WITH 4 RX, 2 TX CHANNELS, 4 DISCRETES, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>RAR-MPCIE-44</b>	ARINC 429 INTELLIGENT 1 LANE MINI PCI EXPRESS CARD WITH 4 RX, 4 TX CHANNELS, 4 DISCRETES, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>RAR-MPCIE-84</b>	ARINC 429 INTELLIGENT 1 LANE MINI PCI EXPRESS CARD WITH 8 RX, 4 TX CHANNELS, 4 DISCRETES, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>RAR-MPCIE-73J</b>	ARINC 429 INTELLIGENT 1 LANE MINI PCI EXPRESS CARD WITH 7 RX, 3 TX CHANNELS, 1 RX, 1 TX ARINC 717 CHANNELS, 4 DISCRETES, IRIG-B, ROHS COMPLIANT, NO CABLE
<b>RCONRARMPCIER</b>	10" CABLE WITH RUGGED 37 POSITION CONNECTOR TO A 37-PIN D-SUB FEMALE PC PANEL MOUNT CONNECTOR, WITH D-SUB MATING CONNECTOR, ROHS COMPLIANT
<b>RCONRARMPCIE</b>	10" CABLE WITH 50 POSITION SLIM STACK CONNECTOR TO A 37-PIN D-SUB FEMALE PC PANEL MOUNT CONNECTOR, WITH D-SUB MATING CONNECTOR, ROHS COMPLIANT
<b>RCONMPCIER</b>	RUGGED 37 POSITION CONNECTOR WITH 18" FLYING LEADS

### Optional Hardware

<b>K suffix</b>	Acrylic conformal coated
<b>M suffix</b>	Acrylic coated with rugged high retention I/O connector
<b>R suffix</b>	Rugged high retention I/O connector
<b>L suffix</b>	Standard transition cable included
<b>V suffix</b>	Rugged high retention transition cable included
<b>S suffix</b>	Acrylic conformal coated and standard transition cable included
<b>X suffix</b>	Acrylic conformal coated and rugged high retention transition cable included
<b>1155-035-8</b>	PCI Express 1 Lane carrier card with 4 Mini PCI Express slots

### Optional Software

<b>CEI-LV</b>	LabVIEW support for ARINC 429
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