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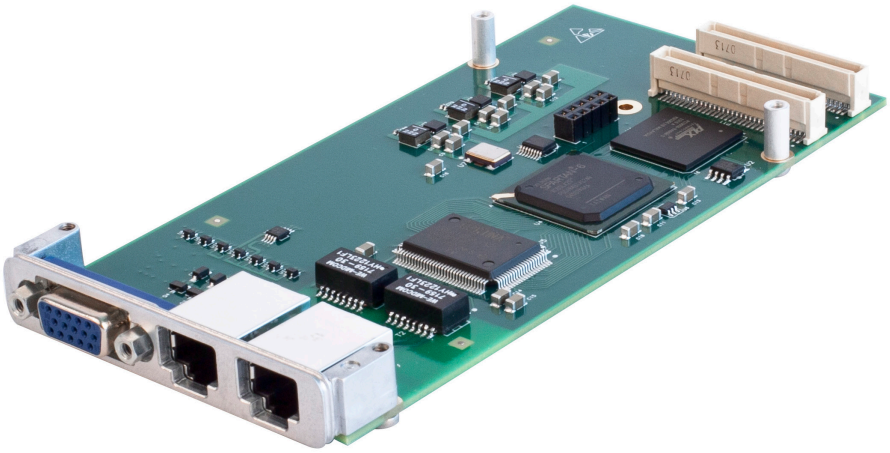
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RCNIC-A2PA

Dual Port ARINC 664 Part 7 PMC Interface

Architecture

Abaco Systems' RCNIC-A2PA is a high performance interface for monitoring, generating or analyzing full-bandwidth AFDX/ARINC 664 Part 7 protocol traffic. Abaco's exclusive pipeline architecture maximizes packet throughput using parallel controllers and efficient DMA transfers, thereby avoiding the bottlenecks of CPU-based interface solutions.

Configurable as either one dual-redundant AFDX/ARINC 664 Part 7 interface or two independent ports, users have complete access to all frame and header data. Each incoming packet is tagged with a 20 nsec resolution, 64-bit time-tag. Real time traffic generation is highly accurate. An IRIG-B receiver/generator is included for synchronization to external IRIG-B time sources and for synchronizing multiple CNIC boards. In addition, I/O triggers, error detection/injection, BIT, and link/protocol level statistics are provided.

AFDX/ARINC 664 Part 7 Performance

Multiple RCNIC-A2PAs in the same PC have been benchmarked at full bandwidth supporting all channels with 2000 VLs (Virtual Links), multiple ports on each VL and minimum payloads (17 bytes).

Advanced Software Support

The RCNIC-A2PA comes with all the software development tools needed for user application development at no extra charge. The Cpcap packet capture library provides a complete set of functions for transmitting and receiving Ethernet frames. Frames from multiple ports can be logged or replayed using the open-source ntar log-file format. AFDX-A implements the AFDX/ARINC 664 Part 7 protocol stack including end systems, redundancy management, virtual links, and ports. An advanced XML-based configuration file format is used to specify end systems.

FEATURES:

- AFDX/ARINC 664 Part 7 dual port interface (two independent 10/100 MHz full duplex ports)
- Available mounted on PCI, PCI Express and 3U cPCI carrier cards
- 33/66 MHz, 32-bit PCI interface
- Includes AFDX and low-level software
- Developers' Kit (SDK) at no additional charge
- Advanced reception features
  - 20 nsec time-tags
  - IRIG-B synchronization
  - DMA transfer to host
  - Full throughput capability
  - Link level error detection
- Advanced transmission scheduling
  - Highly accurate
  - Flexible scheduling modes
  - DMA transfer from host
  - Full throughput capability
  - Link level error injection
- Advanced software support
  - Flexible packet capture API
  - AFDX/ARINC 664 Part 7 API
  - XML configuration format
  - Integrated log file format
  - Berkeley packet filter engine
- Four bi-directional avionics level discretes
- Input and output triggers per channel
- Built-in test features
- Supportable throughout program lifetime with Product Lifetime Management (PLM) program

abaco SYSTEMS

RCNIC-A2PA *Dual Port ARINC 664 Part 7 PMC Interface*

Specifications

Physical
- PMC Mezzanine Card
- Available for PCI, PCIe® and 3U cPCI formats

Environmental
- Commercial operating temp. range: 0°C to +70°C
- Optional temperature range: -40°C to +85°C
- Relative humidity: 5 to 90% (non-condensing)

Software
- Windows® 7 (32- and 64-bit), Vista®, XP®, 2000, 2003 and Linux® support. Contact factory for availability of support for additional operating environments (including LabVIEW™).
- Cpcap API Library
- AFDX-A API Library

Connections
- Two IEEE 802.3 compliant Ethernet RJ-45 connectors
- High density 15-pin D-sub connector for In/Out triggers per port and four bi-directional avionics-level discretes

PCI Signal Compatibility
- Universal (5V or 3.3V)
- 66/33 MHz PCI bus operation
- DMA Tx/Rx data transfers
- CNIC-A2PX (on a PCI carrier) is compatible with PCI-X 1.0 and PCI slots

Timing Reference
- 64-bit time tag
- IRIG-B receiver (AM or TTL/DC)
- IRIG-B generator (TTL/DC)
- IRIG-B PPS synchronization with time tag
- Software-selectable internal wrap

Triggering
- Wait for external trigger to transmit
- Output when marked frame is transmitted
- Output when error-free packet received
- Output when error packet received

Port Parameters
- Full duplex IEEE 802.3 compliant ports
- Software-selectable 10/100 Mbps data rates
- Software-selectable auto-negotiation

Ethernet Frame Reception
- Ethernet frames transferred to host buffers via DMA
- Min-to-copy capability
- High resolution time-tagging with 20 nsec resolution
- Link level error detection

Receive Statistics (64-bit counters)
- Separate counters for Link level errors
  - Physical symbol
  - Invalid preamble symbol
  - Invalid or missing SFD
  - Preamble length too short
  - Unaligned frame
  - IFG too short
  - Frame too short
  - Frame too long
  - CRC errors
- Total bytes received
- Total count of error free packets received
- Total count of packets with errors received
- Dropped packets

Ethernet Frame Transmission
- Ethernet frames transferred from host buffers via DMA
- Transmission scheduling with 20 nsec resolution
- Flexible scheduling modes
  - Minimum IFG delay (960 nsec between frames)
  - Per-frame specified delays (multiple conditions)
  - On external trigger
  - Playback delay modes
- Interrupt generation on user-identified frames

Transmit Statistics (64-bit counters)
- Total packets transmitted
- Total bytes transmitted

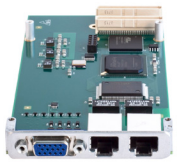
Error Injection
- Physical symbol error
- Preamble (symbol and length) errors
- Framing (byte alignment) error
- SFD (Start frame delimiter) error
- CRC error

Power (max.)
- +3.3 VDC: 950 mA

RCNIC-A2PA Architecture

User Level
- Avionics Applications
- AFDX-A API
- Packet Capture Library (Cpcap)
- OS level
- CNIC Driver

Hardware Level



Ordering information

RCNIC-A2PA	Dual port 10/100 full duplex PMC module for AFDX/ARINC 664 Part 7 support
RCNIC-A2PAX	Dual port 10/100 full duplex PCI card (PMC on carrier) for AFDX/ARINC 664 Part 7 support
RCNIC-A2PA3	Dual port 10/100 full duplex 3U CompactPCI card (PMC on carrier) for AFDX/ARINC 664 Part 7 support
RCNIC-A2PAU4	Dual port 10/100 full duplex 4 lane PCI Express interface card (PMC on carrier) for ARINC 664/AFDX support

Optional Hardware

-E suffix	Extended temperature (only available on PMC native board)
-K suffix	Conformal coated (only available on PMC native board)

Optional Software

BT-AFDX-A	Visual analyzer for AFDX/ARINC 664 Part 7
BT-AIL-A2	Visual analyzer for AFDX/ARINC 664 Part 7 with ARINC 429 and generic EDE

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02/19 A-DS-2008

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