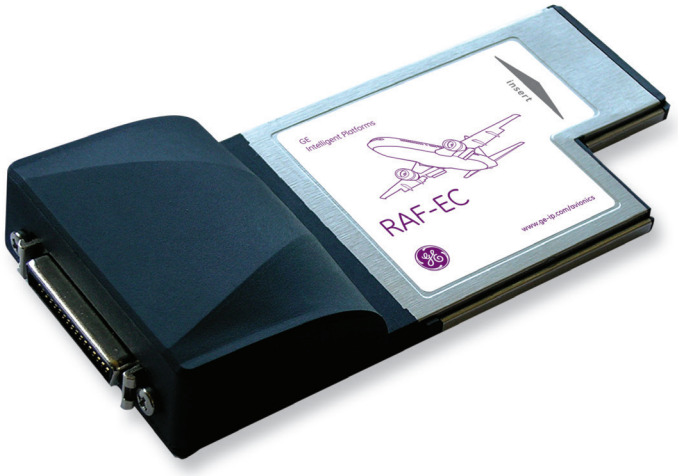

RAF-EC-2P

RoHS Dual Port ARINC 664 ExpressCard Interface

Architecture

Abaco Systems' RAF-EC-2P is a high performance interface for monitoring, generating or analyzing full-bandwidth AFDX-ARINC 664 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 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. Read 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, and link /protocol level statistics are provided.

AFDX/ARINC 664 Performance

The RAF-EC-2P features two independent 10/100 Mbps full- duplex ports, capable of simultaneously receiving back to back Ethernet frames with 12 byte interframe gaps at a rate of 100Mbps each. Each port is capable of transmitting back to back Ethernet frames with 12 byte interframe gaps at a rate of 100Mbps; with both ports transmitting simultaneously, current express card technology limits the total rate to not less than 50% rate for two channels simultaneously or 100% performance for one channel at a time.

Software

The RAF-EC-2P 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 function 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 ARINC 664/AFDX protocol stack including End Systems, redundancy management, Virtual Links and Ports. An advanced XML-based Configuration File format is used to specify End Systems, and an AFDX-aware version of Ethereal is included to provide GUI analysis of logged files.

FEATURES:

- AFDX/ARINC 664 dual port interface (two independent 10/100 Mbps full-duplex ports)
- RoHS Compliant
- Includes AFDX and low-level Software Developer's 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 to host
  - Full throughput capability
  - Link level error injection
- Advanced Software Support
  - Flexible packet capture API
  - AFDX/ARINC 664 API
  - XML configuration format
  - Integrated log file format
  - Berkeley packet filter engine
- Four bi-directional avionics level discretes
- Two input and output triggers per channel

abaco SYSTEMS

RAF-EC-2P *RoHS Dual Port ARINC 664 ExpressCard Interface*

Specifications

Physical
- ExpressCard
- Dimensions: Standard 54mm Express Card dimensions

Environmental
- Card operating temperature: 0° C to +55° C
- Extended temperature: -40° C to +65° C available (operating case temperature range not to exceed -40° C to +65° C)
- Storage temperature: -50° C to +100° C
- Relative humidity: 5 to 90% (non-condensing)

Software
- Microsoft® Windows® 7 (32 and 64bit) and XP support. Contact factory about availability of support for additional operating environments (including LabVIEW.)
- Cpcap API Library
- AFDX-A API Library
- Ethereal GUI for ntar file analysis

Connections
- Transition cable is provided
- 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

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
- Software-selectable internal wrap

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 counter for Link level errors
  - Physical symbol
  - Invalid preamble symbol
  - Invalid or missing SFD
  - Unaligned frame
  - IFG too short
  - Frame too short
  - Frame too long
  - CRC errors

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 or 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 Watts max

Ordering information

RAF-EC-2P	AFDX Express Card, dual port interface, RoHS compliant
-R suffix	Operating case temperature range not to exceed -40° C. to +65° C

Optional Software

BT-AFDX-A	ARINC 664 part 7 traffic analyzer
BT-AIL-A2	ARINC 429 and 664 part 7 (with generic EDE) traffic analyzer

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