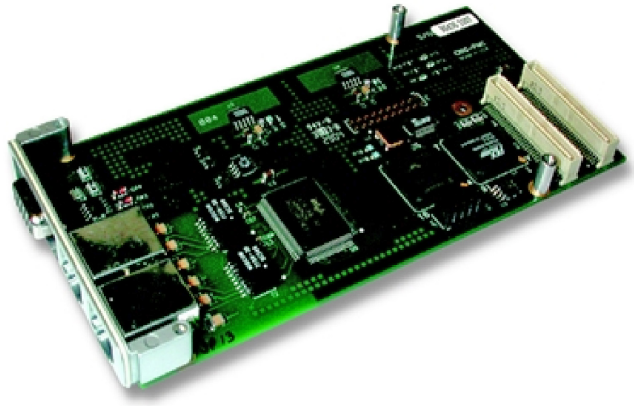
GE
Intelligent Platforms



# CNIC-A2P-U4

## Dual Port ARINC 664 Four Lane PCI Express Interface

### Features

- AFDX/ARINC 664 dual port interface ( two independent 10/100 MHz full duplex ports)
- 4 Lane PCI Express
- 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 from 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
- Input and output triggers per channel
- Built-in test features
- Supportable throughout program lifetime with Product Lifetime Management (PLM) program

**Architecture**

GE Intelligent Platforms CNIC-A2P-U4 is a high performance interface for monitoring, generating or analyzing full-bandwidth AFDX/ARINC 664 protocol traffic. GE Intelligent Platforms 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. 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-A boards. In addition, I/O triggers, error detection/injection, BIT, and link/protocol level statistics are provided.

**AFDX/ARINC 664 Performance**

Multiple CNIC-As 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 CNIC-A2P-U4 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 . CFDX 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

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## Specifications

**Physical**
- PCI Express Interface board (PMC on Carrier)

Standard height, half length (4.376 x 6.600 inches)

**Environmental**
- Commercial operating temp. range:

0° C up to +70° C
- Optional temperature range:

-40° C up to +85° C
- Relative humidity: 5 to 90% (non-condensing)

**Software**
- Windows XP, 2000, 2003 and Linux support . Contact factory about availability of support for additionaloperating environments (including Linux, VxWorks and LabVIEW).
- Cpcap API Library
- CFDX API Library
- Ethereal GUI for ntar file analysis.

**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

**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

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

**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

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

**Optional Configurations**
- Conformal coating
- Extended Temperature

**Contact factory for custom requirements**

## Ordering Information

**CNIC-A2PU4**
**Dual port 10/100 full duplex 4 lane PCI Express interface card (PMC on carrier) for ARINC 664/AFDX support**

**CNIC-A2PKU4**
**Dual port 10/100 full duplex 4 lane PCI Express interface card (PMC on carrier) for ARINC 664/AFDX support with conformal coating**

**CNIC-A2PEU4**
**Dual port 10/100 full duplex 4 lane PCI Express interface card (PMC on carrier) for ARINC 664/AFDX support with ext temp**

**CNIC-A2PEKU4**
**Dual port 10/100 full duplex 4 lane PCI Express interface card (PMC on carrier) for ARINC 664/AFDX support with ext temp and conformal coating**

**For detailed information including systems options contact GE Intelligent Platforms**

### About GE Intelligent Platforms

GE Intelligent Platforms, a General Electric Company (NYSE: GE), is an experienced high-performance technology company and a global provider of hardware, software, services, and expertise in automation and embedded computing. We offer a unique foundation of agile, advanced and ultra-reliable technology that provides customers a sustainable advantage in the industries they serve, including energy, water, consumer packaged goods, government and defense, and telecommunications. GE Intelligent Platforms is a worldwide company headquartered in Charlottesville, VA and is part of GE Enterprise Solutions. For more information, visit www.ge-ip.com.

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www.ge-ip.com