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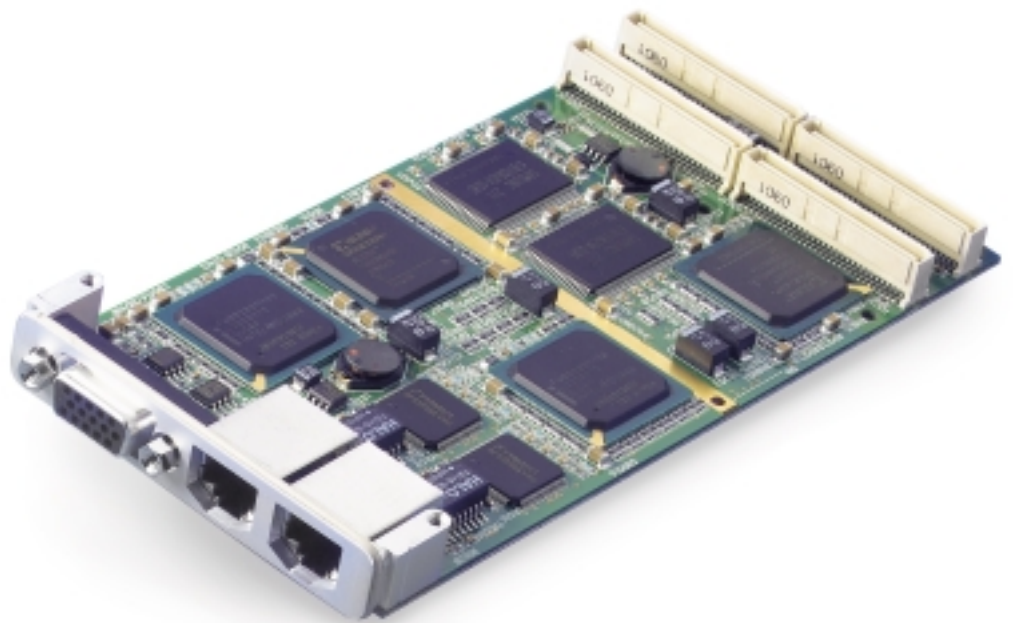
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# AMC-FDX-2



**Two Port AFDX Test,  
Simulator and Monitor  
Module for PMC**



*www.aim-online.com*



*Right on Target*

Avionics Databus Solutions



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## Traffic Generation

The AMC-FDX-2 provides real time traffic generation on both ports concurrently. Transmitter operation allows users to fully programme all fields of the AFDX Frame including the Virtual Link Identifier, MAC Source Address, IP Structure, UDP Structure, Payload and Sequence number. Multiple modes of transmit sequencing are supported, these being Generic / Replay and UDP Port oriented shaped Transmissions. Users can programme Payload Data with User Defined or Fixed Data. Inserting the Time Tag in the Payload Data provides an elegant solution to measure frame transmit delays through the network. Synchronisation of transmissions across multiple ports is achieved by using Strobe Inputs/Outputs.

- *Programmable Timing & Sequencing of Frames*
- *Physical Error Injection - CRC, Gap, Size, Alignment*
- *Logical Error Injection on Layers 2, 3, 4*
- *Timing Error Injection - Violation of Bandwidth Allocation Gap (BAG)*
- *Autonomous Dynamic Data Generation*
- *UDP Port Simulation with Traffic Shaping & Sequence Numbering*
- *On-board support for sampling and queuing ports*



## Chronological Receive Mode (Monitor Mode)

The AMC-FDX-2 module ports can be configured in Chronological Receive Mode to sequentially receive frames and store them in a circular buffer. The payload data can be discarded to optimise the use of the buffer for frame capture and analysis. Powerful Filtering, Triggering, Complex Triggering and Capture Modes allows users to select only the frames, data and errors of interest. Monitor Mode also provides activity monitoring and statistics for each VL recorded by the AMC-FDX-2 module. The interface modules report the number of frames received and the number of errors detected globally and in VL orientated format.

- *VL Orientated Receive and Filtering*
- *Second level filtering on Generic Frame Parameters*
- *Chronological Monitor with Time Stamping to 1µs*
- *Massive on-board Monitor Buffer*
- *Inter frame Gap time measurements with 40 nsec resolution*
- *Comprehensive Triggering / Filtering / Capturing*
- *Programmable Data Capture Modes - Trace after Trigger & Recording*
- *Physical Error Detection - CRC, Gap, Size and Alignment*
- *AFDX Specific Error Detection*

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## UDP/VL Receive Mode

The AMC-FDX-2 module ports can be configured to work in UDP / VL oriented receive mode. In this mode each UDP port has a separate buffer queue. Received frames are stored with frame headers containing time tag and status information. Frame header information can be stored and payload data optionally discarded for the testing of Switches and the complete network. With the Traffic shaping verification enabled, any violations are reported as errors in related frame headers.

- *VL oriented Filtering*
- *Second Level Filtering on Generic Frame Parameter*
- *Time Stamping of Received Packets with extended IRIG-B time code (1µs)*
- *Physical Error detection, Frame Level - CRC, Gap, Size and Alignment*
- *AFDX Specific Error Detection*
  - *Traffic Shaping Verification*
  - *Verification of MAC, IP and UDP Headers*
  - *VL oriented Integrity Checking*



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## Application Support Processor

The 600 MHz Application Support Processor (ASP) provides unique on-module processing functions typically provided by host PC processing systems.

- *IP and UDP layer of the AFDX protocol*
- *Driver Software Execution on the board*
- *Dynamic Data Generation*
- *Loop / Pollution between Rx and Tx port*
- *Automatic Test Sequence Generation*
- *Program using Real Time operating systems*

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## IRIG-B Time Code Decoder

An on board IRIG-B Time Code decoder and generator allows synchronisation of multiple AFDX ports using multiple AMC-FDX-2 modules. Modules can be synchronised using an external IRIG-B time source or the on-board Time code generator of one module as the reference for accurate correlation of data across multiple AFDX ports.

# AMC-FDX-2



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## Physical Bus Interface

The AMC-FDX-2 modules provide two AFDX ports which can be used as two single channel or as one dual redundant channel AFDX specific Physical Bus Interface.

- Customised Media Access Controllers (MAC's) implemented in FPGA optimised for AFDX
- 2 MByte Transmit / Receive Burst Buffer
- Physical Interface and Magnetics (COTS)
- 8-socket Network Interface connectors - RJ45
- Trigger, Strobe and Time Code I/O connector

## Driver Software Support

The AMC-FDX-2 module is supplied with an Application Programming Interface (API) and Drivers compatible with Windows, Linux, LynxOS and VxWorks.

## Technical Data

**Sub-System Interface:** 64 Bit / 33 MHz PCIbus (Revision 2.2) compliant

**Processors:** Two 32-bit, 600MHz RISC Processors

**Memory:** 64 MBytes Global RAM, 64 MBytes ASP RAM

**Encoder/Decoder:** Two AFDX specific Ethernet MAC's

- Inter Frame Gap generation and measurement with 40 nsec resolution

**Time Tagging:** 46 bit absolute IRIG-B Time with 1µsec resolution

**Physical Bus Interface:**

Two full duplex AFDX ports configurable to one dual-redundant AFDX port

**Connectors:**

- 4x Standard PMC Connectors
- 2 x 8 way RJ45 connectors, one per AFDX port
- 1 x 15 way HD-Sub connector (female) for Time Code and Trigger I/O

**Dimensions:** 149 x 74 mm Standard PMC Format

**Power Consumption:** typical 7 Watts (operating)

**Operating Temp. Range:**

Standard: 0°C... +55°C ambient. Extended: -15°C... +60°C ambient

**Storage Temp. Range:** -40°C ... +85°C ambient

**Humidity:** 0 to 95% non-condensing

## Ordering Information

### AMC-FDX-2

Two Port, PMC (PCI Mezzanine Module) to AFDX Interface:  
Traffic Simulator, Receiver and Chronological Monitor including IRIG-B  
Time Code Decoder / Generator  
64 MByte Global RAM, 64MByte ASP RAM  
Available option: Conduction Cooled Configuration

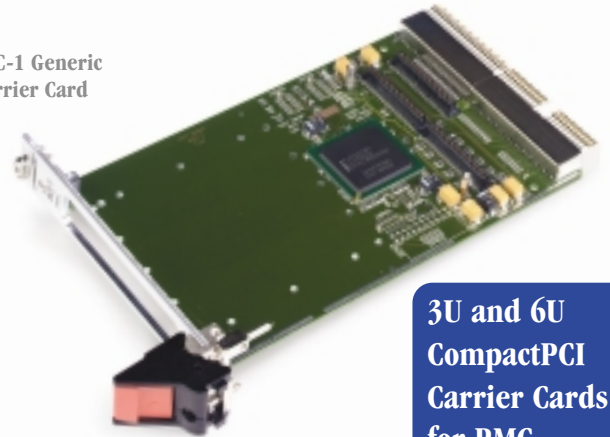
### AVC-2

VME (6U) Carrier Module with two PMC slots

# ACC-1/ACC-2

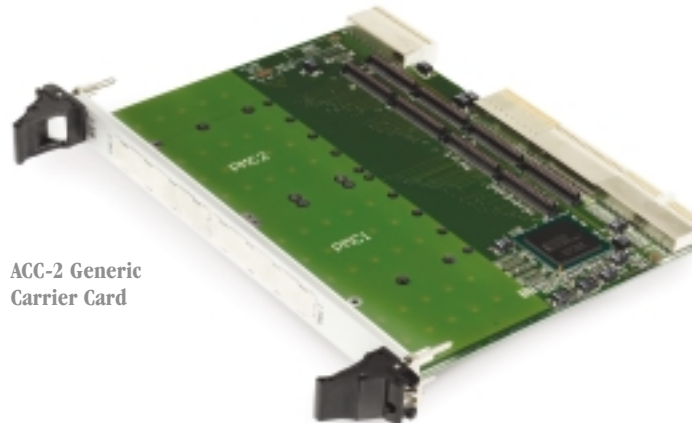
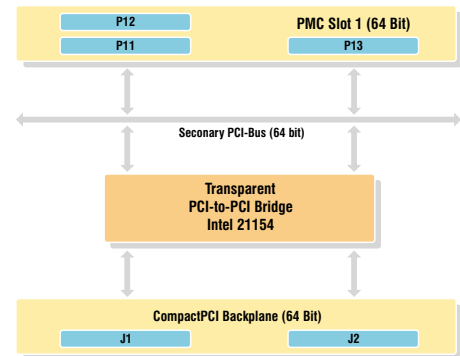
CompactPCI Generic Carrier Cards for PMC (PCIbus Mezzanine Card) modules

ACC-1 Generic Carrier Card



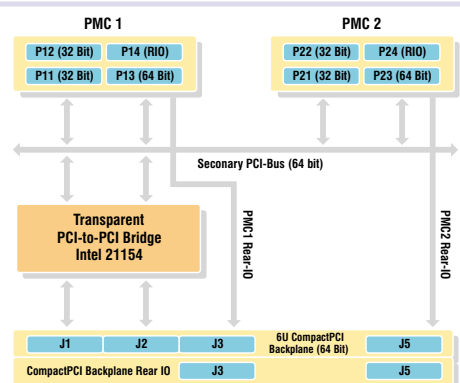
3U and 6U CompactPCI Carrier Cards for PMC

ACC-1



ACC-2 Generic Carrier Card

ACC-2



## General Features

The ACC-1 and ACC-2 are members of AIM's new family of 64bit extended PMC Carrier Boards. The ACC-1 is a single slot, single height (3U) CompactPCI module with one PMC slot to plug in a standard PMC module, whilst the ACC-2 is a single slot, double height (6U) CompactPCI module to plug in two standard PMC modules. Both implement a PCI-to-PCI Bridge using the industry standard INTEL device.

The ACC-1 and ACC-2 fulfil the requirements of the CompactPCI specification as well as the requirements of the PCIbus standard both Primary and Secondary sides. The PMC-slot is in conformance with the Draft Standard Physical and Environmental Layers for PCI Mezzanine Cards (P1386.1/Draft 2.4).

### PMC Module Interface

The ACC-1/ ACC-2 are designed to plug all standard PMC modules with a maximum PCIbus width of 64bit and a PCIbus operation up to 66 MHz.

The ACC-1/ ACC-2 carrier board is of Universal I/O signaling voltage type and can be plugged in either a +3.3V or +5.0V CPCI chassis. On the secondary PCIbus side the PMC slot is configured to support +3.3V, I/O signaling voltage for use with +3.3V PMC modules. For +5.0V PMC modules the Carrier is identified by a different part number. The use of a voltage keying pin protects against false PMC assembly.

## Key Features

- Easily configured with any AIM PMC Databus Module: AFDX/ARINC664, ARINC429, MIL-STD-1553 or any standard Third Party PMC module
- Mix and Match different Databus Modules with the ACC-2
- Rear I/O available for ACC-2
- 66Mhz operation for +3.3V environments
- +5.0V signaling environment available
- 64 bit PCI bus extension
- Fully compliant to CompactPCI Specification
- Hosts PMC interface designed to PMC standard P1386.1/Draft 2.4

# ACC-1/ACC-2

CPCI (3U and 6U)  
Generic Carrier Cards for PMC  
(PCIbus Mezzanine Card)  
modules

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## Technical Data

### CPCI Interface

- Fully compliant to CompactPCI specification, PICMG 2.0 R3.0
- Supports +5V and +3.3V signaling voltage • CPCI Databus width of 32bit / 64bit
- CPCI Databus operation of up to 66MHz
- INTEL 21154 PCI-to-PCI Bridge Controller between CPCIbus and PCibus

### PMC Interface

- ACC-1 Host Carrier board provides one PMC slot
- ACC-2 Host Carrier board provides two PMC slots
- Fully compliant to PCI Mezzanine card standardisation P1386.1 / Draft 2.4
- Supports +5V or +3.3V signaling voltage • PMC Databus width of 32bit / 64bit
- PMC Databus operation of up to 66MHz

### PCI Bus

- Provides connections between CompactPCI Interface and the PMC slot/ slots
- Fully compliant to PCibus Specification Rev 2.1
- Supports either +5V or +3.3V VIO voltage, protected by PMC Keying Code
- PCibus width of 32bit / 64bit • PCibus operation of up to 66MHz
- Priority based PCibus Arbiter

### Connectors: ACC-1

- CompactPCI: J1 Primary 32bit Bus / J2 Primary 64bit Bus
- PMC: P11 Secondary 32bit Bus / P12 Secondary 32bit Bus  
P13 Secondary 64bit Bus

### Connectors: ACC-2

- CompactPCI: J1 Primary 32bit Bus / J2 Primary 64bit Bus  
J3 I/O (PMC 1) / J5 I/O (PMC 2)
- PMC: P11 Secondary 32bit Bus / P12 Secondary 32bit Bus  
P13 Secondary 64bit Bus / P14 I/O  
P21 Secondary 32bit Bus / P22 Secondary 32bit Bus  
P23 Secondary 64 bit Bus / P24 I/O

**Front Panel:** PMC-Bezel standard Breakout

**Dimensions:** ACC-1: 3U Board: 100mm x 160mm  
ACC-2: 6U Board: 233mm x 160mm

**Power Dissipation:** ACC-1: 2.2 Watt maximum: full BusLoad (excludes PMC dissipation)  
ACC-2: 2.2 Watt maximum: full BusLoad (excludes PMC dissipation)

**Temperature:** 0 to +70°C Standard Operating  
-15 to +85°C Extended Temperature  
-55 to +125°C Storage

**Humidity:** 5 to 95% non-condensing

## Ordering Information

**ACC-1:** CPCI (3U) Carrier Module with one PMC slot  
**ACC-1-5V:** CPCI (3U) Carrier Module with one PMC slot (5V version)  
**ACC-2:** CPCI (6U) Carrier Module with two PMC slots  
**ACC-2-5V:** CPCI (6U) Carrier Module with two PMC slots (5V version)

