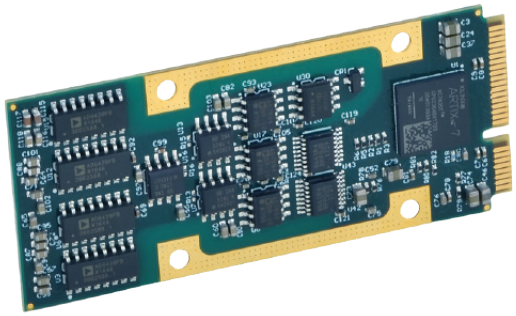
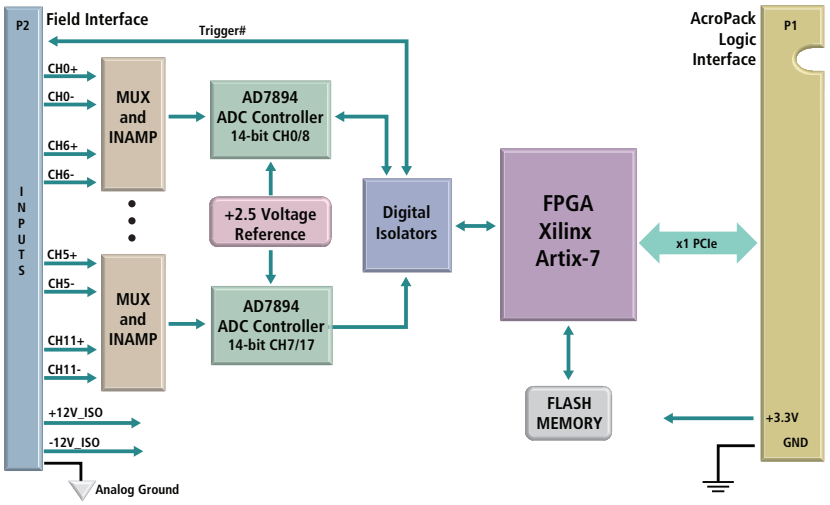
AcroPack® Modules

AP342 14-bit Isolated ADC High-Density Analog Input





14-bit ADC with Simultaneous Multi-channel Conversion ◆ 12 Differential Channels ◆ PCIe Bus Interface

Description

The AcroPack® product line updates our popular Industry Pack I/O modules with a PCIe interface format. This **COTS tech-refresh design** offers a compact size, low-cost I/O, the same functionality and memory map of the existing IP modules in a rugged form factor. Combine different AcroPack modules on one carrier for a simplified modular approach to system assembly.

AP342E-LF AcroPack provides fast, high resolution, simultaneous A/D conversion of up to six channels. Simultaneous channel conversion and on-board memory enable megahertz throughput rates. Programmable interrupts simplify data acquisition by providing greater control.

These modules have twelve differential analog inputs which are sampled as two six-channel banks. Six A/D converters (ADCs) permit simultaneous conversion of up to six channels in a bank. A FIFO buffer holds the first bank's data while the second bank is converted. Conversion of each bank requires only 8µS, and all 12 channels can be sampled in just 16µs.

Flexible configuration options give you extensive control over the conversion process. The channels or bank to be converted, timing, scan mode, and other parameters are user-programmable. Interrupt support adds further control to flag a FIFO that is full or filled to a user-defined threshold level.

Designed for COTS applications these analog input modules deliver high-density, high-reliability, and high-performance at a low cost.

AcroPack modules are RoHS compliant and ideal for military, defense, automation, aerospace, scientific, and development labs industries.

The AP342E-LF modules are 70mm long, 19.05mm longer than the full-length mini-PCIe card. The board's width is the same as mPCIe board and they use the same mPCIe standard board hold down standoff and screw keep out areas.

A down facing 100 pin Samtec connector will mate with the carrier card. Fifty of these signals are available as field I/O signals.

Key Features & Benefits

- PCI Express Generation 1 interface
- Six 14-bit A/D converters with simultaneous multi-channel conversion
- 12 differential inputs with ±10VDC input range
- Mix and match countless I/O combinations in a single slot
- 8µs conversion time (125kHz) for 6-ch. bank
- FIFO buffer with 1025 sample memory
- Interrupt upon FIFO threshold condition
- FIFO full, empty and threshold reached flags
- Programmable channel conversion control
- Programmable conversion timer
- Continuous and single-cycle conversion modes
- External trigger input and output
- Calibration constants for gain and offset correction stored on-board
- Solid-down connector I/O interface
- Wide temperature range
- PCIe, VPX and XMC carriers
- Linux®, Windows®, and VxWorks® support

Acromag® THE LEADER IN INDUSTRIAL I/O

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AcroPack® Modules

AP342 14-bit Isolated ADC High-Density Analog Input

Performance Specifications

Analog Input

Input configuration
12 differential.

ADC Resolution
14 bits.

Input range
±10V.

Data sample memory
1025 sample FIFO buffer.

Maximum throughput rate
Eight channels can be simultaneously acquired.
One channel: 125KHz (8µS/conversion).
6 channels (same bank): 750kHz (8µS/6 channels).
12 channels (high and low banks): 750kHz (16µS/12 channel at minimum 2.2K ohm source resistance).

ADC triggers
Internal timer, external, and software.

System accuracy
2.8 LSB (0.017%).

Data format
Binary two's compliment.

Input overvoltage protection
±25V with power on, ±40V with power off.

Common mode rejection ratio (60Hz)
96dB typical.

Channel-to-channel rejection ratio (60Hz)
96dB typical.

PCI Express Base Specification

Conforms to PCIe base specification
Revision 2.1.

Lanes
1 lane in each direction.

Bus Speed
2.5 Gbps (Generation 1).

Memory
8k space required.
1 base address register.

Environmental

Operating temperature
-40 to 70°C.
-40 to 85°C.
(requires an AcroPack heatsink conduction-cool kit)

Storage temperature
-55 to 125°C.

Relative humidity
5 to 95% non-condensing.

Power

Power Supply Voltage	Current Draw (typical)
+3.3 VDC ±5%	470mA 550mA max.
+12 VDC isolated ±5%	60mA 75mA max.
-12 VDC isolated ±5%	7mA 20mA max.

Isolation Voltage
250V field I/O to FPGA logic
60V field I/O to field I/O

Physical

Length
70mm.

Width
30mm.

Ordering Information

AcroPack® Modules

AP342E-LF
14-bit ADC simultaneous sample and hold.

(Note: AcroPack modules are compatible only with the carriers listed below)

Accessories

AP-CC-01
Conduction-cool kit

Carrier Cards

APCe7010E-LF
PCIe AcroPack carrier, holds one AcroPack module, air-cooled.

APCe7020E-LF
PCIe non-isolated AcroPack carrier, holds two AcroPack modules, air-cooled.

APCe7040E-LF
PCIe AcroPack carrier, holds four AcroPack modules, air-cooled.

VPX4500E-LF
3U VPX non-isolated AcroPack carrier, holds three AcroPack modules, air-cooled.

VPX4500-CC-LF
3U VPX non-isolated AcroPack carrier, holds three AcroPack modules, conduction-cooled.

XMCAP2020-LF
XMC non-isolated AcroPack carrier; holds two AcroPack modules, 2-slots out front, air-cooled.

XMCAP2021-LF
XMC non-isolated AcroPack carrier; holds two AcroPack modules, 2-slots out rear, air-cooled.

Software *(see software documentation for details)*

APSW-API-VXW
VxWorks® software support package.

APSW-API-WIN
Windows® DLL driver software support package.

APSW-API-LNX
Linux® support (website download only).

AP-CC-01 Conduction-Cool Kit

ISO9001
AS9100
MADE IN USA

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