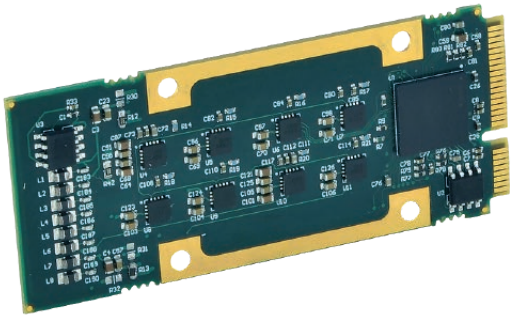
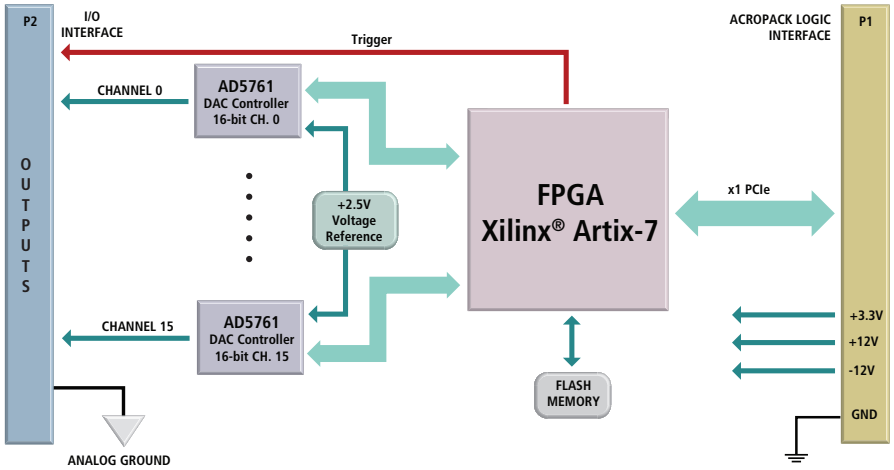
AcroPack® Modules

AP235 16-bit DAC Voltage Waveform Output

CE 2 YEAR WARRANTY RoHS Compliant





16-bit DAC ◆ 16 Channels Voltage Output ◆ Wide Temperature Range ◆ 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** offers a compact size and low-cost I/O in a rugged form factor. Combine different AcroPack modules on one carrier for a simplified modular approach to system assembly.

The AP235 outputs analog voltage signals to drive up to 16 devices. When used with a carrier that holds two AcroPack AP modules, up to 32 voltage outputs can be obtained from a single card cage slot. The AP235 is ideal for waveform generation application that require high speed capabilities.

Each output channel has its own 16-bit D/A converter (DAC). Individual DACs are faster, and they eliminate glitches typically caused by the re-acquisition process of sample and holds found on multiplexed output boards. A 64K sample memory is provided for waveform storage on board. This memory is shared between the sixteen channels. Waveforms can be continuously output from onboard memory without host intervention. Additionally, a DMA controller is provided for streaming waveform data from host memory.

Designed for COTS applications these analog output 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 AP235 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 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.

The AP235 supports 6 independent software selectable output ranges.

Key Features & Benefits

- PCI Express Generation 1 interface
- Independent 16-bit D/A converters per channel
- Waveforms can be continuously output from onboard memory without host intervention
- DMA controller provides for streaming waveform data from host memory
- Mix countless I/O combinations in a single slot
- Per channel configurability of bipolar and unipolar output ranges
- Sample software and diagnostics
- Configurable FIFO sizes up to 64K samples offer flexible waveform lengths
- Built-in calibration coefficients
- Flexible trigger, operating modes, and memory allocation
- Independent selectable output ranges
- Outputs reset to 0 volts
- Internally stored calibration coefficients ensure accuracy.
- Synchronization of multiple modules using an external trigger
- Solid-down connector I/O interface

Acromag® THE LEADER IN INDUSTRIAL I/O

Tel 248-295-0310 ■ Fax 248-624-9234 ■ solutions@acromag.com ■ www.acromag.com ■ 30765 Wixom Rd, Wixom, MI 48393 USA

AcroPack® Modules

AP235 16-bit DAC Voltage Waveform Output

Performance Specifications

Analog Output

Output configuration
16 non-isolated bipolar/unipolar.

D/A Resolution
16 bits.

Output ranges
Unipolar: 0V to 5V, 0V to 10V.
BiPolar: -2.5V to 7.5V, ±-3V, ±5V, ±10V.

Output rate
100kS/s

Settling time
9uS - 20V step to 1 LSB at 16-bit resolution.
7.5uS - 10V step to 1 LSB at 16-bit resolution.

Maximum throughput rate
Outputs can be updated simultaneously or individually.
7.5µS/conversion.

Calibrated system accuracy
Linearity error: ±0.2 LSB.
Offset error: ±0.0625 LSB.
Gain error: ±0.0625 LSB.
Total error: ±2.125 LSB (±0.0032% FSR) maximum.

Data format (left–justified)
Straight Binary or Two's Complement.

Output at reset
0 volts.

Output current
10mA (maximum). This corresponds to a minimum load resistance of 1K ohms with a 10V output.

Short circuit protection
Indefinite at 25°C.

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
1MB space required.
1 base address register.

Environmental

Operating temperature
-40 to 70°C.
-40 to 75°C. *Requires an AcroPack heatsink conduction-cool kit.*

Storage temperature
-55 to 150°C.

Relative humidity
5 to 95% non-condensing.

MTBF
Please contact factory.

Power
+3.3 VDC ±5% 0.5A typical, 1A maximum.
+12 VDC ±5% 85mA typical, 275mA maximum.
-12 VDC ±5% 50mA typical, 200mA maximum.

Physical

Length
70mm.

Width
30mm.

Ordering Information

AcroPack® Modules

AP235-16E-LF
16 voltage outputs, 16-bit DAC with waveform generation capabilities.

(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 AcroPack carrier, holds two AcroPack modules, air-cooled.

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

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

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

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

XMCAP2021-LF
XMC 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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Tel 248-295-0310 ■ Fax 248-624-9234 ■ solutions@acromag.com ■ www.acromag.com ■ 30765 Wixom Rd, Wixom, MI 48393 USA

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