**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, 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.

The AP236 outputs analog voltage signals to drive up to 8 devices. When used with a carrier that holds four AcroPack modules, up to 32 voltage outputs can be obtained from a single card cage slot.

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.

Individual channels also have double-buffered data latches. You can select to update each output when it is written to, or to update all outputs simultaneously. Simultaneous outputs better simulate linear movements in motion processes.

**Key Features & Benefits**

- PCI Express Generation 1 interface
- Independent 16-bit D/A converters per channel
- Sample software and diagnostics
- Double-buffered DACs
- Built-in calibration coefficients
- Independent selectable output ranges
- Outputs reset to 0 volts
- Internally stored calibration coefficients ensure accuracy.
- Software provides easy selection of transparent or simultaneous output modes.
- Double-buffered DACs allow new data to be written to each channel before the simultaneous trigger updates the outputs.
- Alarm function
- Solid-down connector I/O interface
- Wide temperature range
- PCIe, VPX and XMC carriers
- Linux®, Windows®, and VxWorks® support
Performance Specifications

- **Analog Output**
  - Output configuration
    8 isolated bipolar/unipolar.
  - D/A Resolution
    AP236-8E-LF: 16 bits.
  - Output ranges
    Unipolar: 0V to 5V, 0V to 10V.
    BiPolar: -2.5V to 7.5V, ±-3V, ±5V, ±10V.
  - Settling time
    9μS - 20V step to 1 LSB at 16-bit resolution.
    7.5μS - 10V step to 1 LSB at 16-bit resolution.
  - Maximum throughput rate
    Outputs can be updated simultaneously or individually.
    One channel: 7.5μS/conversion.
    Eight channels simultaneously: 17μS/8 channels.
  - Calibrated system accuracy
    Linearity error: ±0.5 LSB.
    Offset error: ±0.0625 LSB.
    Gain error: ±0.0625 LSB.
    Total error: ±0.625 LSB (±0.0152% 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.
  - Alarm function
    Software readable for brownout, short-circuit and temperature exceeding 150 °C conditions.

- **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
    4k 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 150°C.
  - Relative humidity
    5 to 95% non-condensing.
  - MTBF
    Contact the factory
  - Power
    See user manual for specifics.

- **Physical**
  - Length
    70mm.
  - Width
    30mm.

Ordering Information

- **AcroPack® Modules**
  - AP236-8E-LF
    8 isolated voltage outputs, 16-bit DAC
    (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.
  - APCe7022E-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**
  - APSW-API-VXW
    VxWorks® software support package.
  - APSW-API-WIN
    Windows® DLL driver software support package.
  - APSW-API-LNX
    Linux® support (website download only).