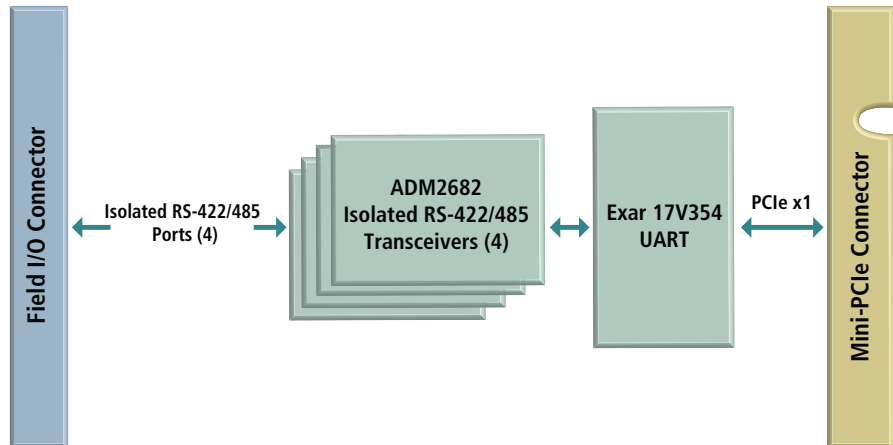
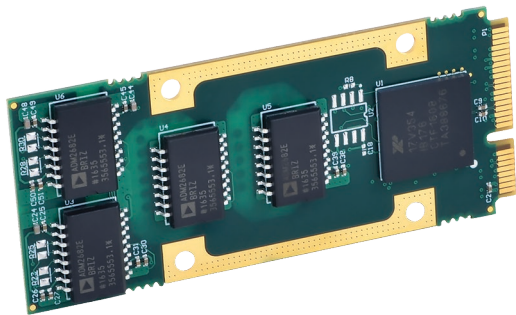


# AcroPack® Modules

AP500 Series Communication



Four Isolated RS422/485 Serial Ports ◆ Extended Temperature ◆ PCIe Bus Interface

## Description

Model: AP512E-LF

The AcroPack® product line updates our popular Industry Pack I/O modules with a PCIe interface format. This tech-refresh design offers a compact size, low-cost I/O, the same functionality and memory map of the existing Industry Pack modules and a rugged form factor.

These modules provide four isolated serial communication ports from a single AP carrier slot for a high-density solution. Software-configuration helps you quickly set baud rates, character-sizes, stop bits, and parity.

For more efficient data processing, each serial port is equipped with 256-character FIFO buffers on the transmit and receive lines.

The data ports generate individually controlled transmit, receive, line status, data set, and flow control interrupts. All interrupts can be read from a single register.

The AP512 series modules are 70mm long. This is 19.05mm longer than the full length mini PCIe card at 50.95mm. The boards width is the same as mPCIe board of 30mm and they use the same mPCIe standard board hold down standoff and screw keep out areas.

A down facing 100 pin Samtec connector mates with the carrier card. Fifty of these pins are available for field I/O signals. Pin spacing and signal assignments will allow for 100V of port to port isolation.

The AP512 series maintains the same functionality and memory map of the existing Industry Pack modules providing a smooth transition to the AcroPack I/O modules.

## Key Features & Benefits

- Four isolated full duplex RS422B serial ports (supports RS485)
- Ports are isolated to 250V from digital and 100V from each other
- 256-byte transmit FIFO buffers  
256-byte receive FIFO buffers
- Programmable baud rate (up to 16Mbps)
- Line-break and false start-bit detection
- Failsafe receivers
- 16550 compatible register set
- High-density design lowers per-port costs and saves IP carrier card slots for other functions.
- 256-byte FIFO buffers minimize CPU interaction for improved system performance.
- Extended temperatures deliver dependable operation in extreme conditions.

**Acromag**   
THE LEADER IN INDUSTRIAL I/O

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## Performance Specifications

### Serial Ports

#### Configuration

Independent, isolated serial ports.

#### Data Rate

16M bits/second, maximum

#### Max. Cable Length

1200 meters (4000 feet) typical

#### Character size

5 to 8 bits, software-programmable

#### Parity

Odd, even, or no parity; software-programmable.

#### Stop bits

1, 1-1/2, or 2 bits; software-programmable

#### Data register buffers

256-byte FIFO buffer

#### Interrupts

Receiver line status (overrun, parity, framing error, or break interrupt); receive/transmit FIFO level reached or character time-out; Xon/Xoff or special character detected.

### PCI Express Base Specification

Conforms to revision 2.0

#### 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

+3.3V (±5%) 450mA typical

#### Internal Isolated Power

Isolated power is created onboard using ADM2882E Full Duplex RS-485 transceivers, so isolated power does not need to be supplied externally.

#### MTBF (Mean Time Between Failure)

MTBF in hours using MIL-HDBK-217F, Fn2. Per MIL-HDBK-217, Ground Benign, Controlled, G<sub>3</sub>G<sub>4</sub>.

25°C:

6,460,240 MTBF hours (737.5 MTBF years).

154.8 failure rate (FIT<sup>1</sup>).

40°C:

3,982,636 MTBF hours (454.6 MTBF years).

251.1 failure rate (FIT<sup>1</sup>).

Note 1: FIT if Failures in 10<sup>9</sup> hours.

### Physical

#### Size

Length: 70mm (2.76 in).

Width: 30mm (1.18 in).

Height: 12.5mm (0.492 in).

#### Weight

Unit weight: 8.3g (0.293 oz).

## Ordering Information

### AcroPack<sup>®</sup> Modules

[Go to website product page for more information.](#)

#### AP512E-LF

Four Isolated RS422/485 serial ports

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

### Accessories

#### AP-CC-01

Conduction-cool kit

### Carrier Cards

See [Acromag.com/AcroPack-Carriers](http://Acromag.com/AcroPack-Carriers) for a full list of AcroPack carrier cards.

**Software** (see software documentation for details)

#### APSW-API-VXW

VxWorks<sup>®</sup> software support package.

#### APSW-API-WIN

Windows<sup>®</sup> DLL driver software support package.

#### APSW-API-LNX

Linux<sup>®</sup> support (website download only).



AP-CC-01 Conduction-Cool Kit