**Description**

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 asynchronous 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 asynchronous, 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
## 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
- **Memory**: 1 base address register

### Environmental
- **Operating temperature**: -40 to 70°C
- **Storage temperature**: -55 to 125°C
- **Relative humidity**: 5 to 95% non-condensing
- **Power**: +3.3V (±5%) 450mA typical

### Physical
- **Length**: 70mm
- **Width**: 30mm

## Ordering Information

### AcroPack® Modules
- **AP512E-LF**: Four RS422/485 serial ports
  - (Note: AcroPack modules are compatible only with the carriers listed below)

### Accessories
- **AP-CC-01**: Conduction-cool kit
- **5028-609**: Cable, 68-pin VHDCI to four male DE-9, 7” long.

### 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
- **(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).

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