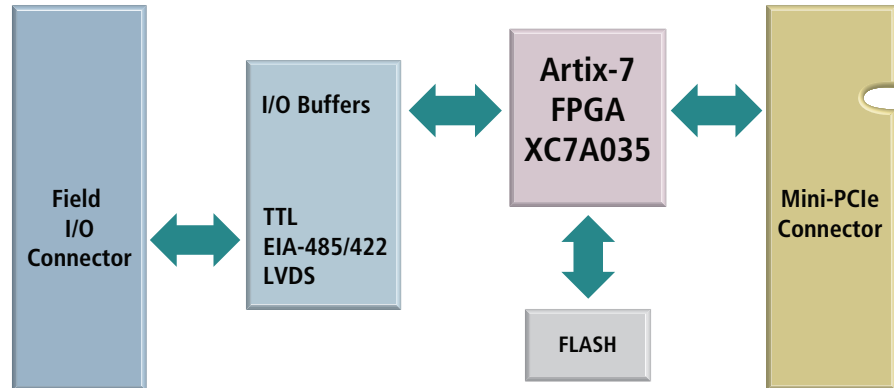
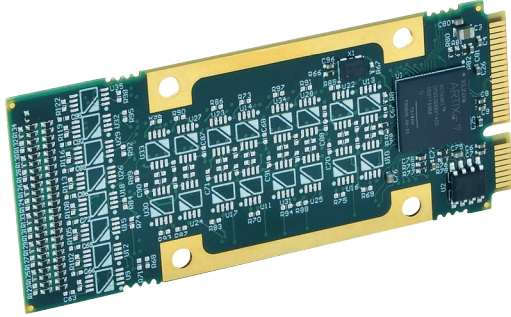


# AcroPack® Modules

**APA7-200 Series** User-Configurable Artix®-7 FPGA I/O Modules



Reconfigurable Xilinx® Artix®-7 FPGA ◆ Conduction or Air Cooled ◆ PCIe Bus Interface

## Description

### Models

**APA7-201E-LF:** 48 TTL channels

**APA7-202E-LF:** 24 EIA-485/422 channels

**APA7-203E-LF:** 24 TTL and

12 EIA-485/422 channels

**APA7-204E-LF:** 24 LVDS channels

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 as the existing Industry Pack modules and a rugged form factor.

The APA7-200 series provides a FPGA based user-configurable bridge between a host processor and a custom digital interface via PCI Express. These boards feature a best in class Artix®-7 interface to deliver the industry's lowest power and high performance.

Designed for COTS applications these FPGA based digital I/O modules deliver user-customizable I/O, high-density, high-reliability, and high-performance at a low cost.

The APA7-200 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.

The Engineering Design Kit provides users with basic information required to develop custom FPGA firmware for download to the Xilinx FPGA. Example FPGA design code is provided as a Vivado IP Integrator project for functions such as a one-lane PCI Express interface, DMA, digital I/O control register, and more. Users should be fluent in the use of Xilinx Vivado design tools.

## Key Features & Benefits

- PCI Express Generation 1 interface
- Reconfigurable Xilinx® FPGA
- High channel count digital interface: RS485, LVDS and TTL interface options.
- 32Mb quad serial Flash memory
- 33,280 logic cells
- 41,600 Flip flops
- 1,800 kb block RAM
- 90 DSP slices
- External LVTTTL clock input
- Long distance data transmission
- Example design
- Power up and systemd reset is failsafe
- Conduction-cooled options

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

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# AcroPack® Modules

## APA7-200 Series User-Configurable Artix®-7 FPGA I/O Modules

### Performance Specifications

#### ■ FPGA

FPGA device

Xilinx Artix-7 FPGA Model XC7A35T

FPGA configuration

Download via flash memory

Example FPGA program

IP integrator block diagram provided for PCIe bus 1 lane Gen 1 interface, DMA controller, on chip block RAM, flash memory and control of field I/O.

See EDK kit.

#### ■ I/O Processing

Field I/O Interface

PCIe bus 1 lane Gen 1 interface

I/O Connector

100 pin field I/O connector

#### ■ Engineering Design Kit

Provides user with basic information required to develop a custom FPGA program. Kit must be ordered with the first purchase of a APA7-200 series module (see [www.acromag.com](http://www.acromag.com) for more information).

#### ■ PCI Express Base Specification

Conforms to revision 2.0

Lanes

1 lane in each direction

Bus Speed

2.5 Gbps (Generation 1)

Memory

128k space required

1 base address register

#### ■ Environmental

Operating temperature

Air Cooled with heat sink

-40 to 80°C

Air Cooled without heat sink

-40 to 70°C

Conduction Cooled

-40 to 85°C

*A conduction cooled application with an AcroPack requires heatsink model AP-CC-01*

Storage temperature

-55 to 125°C

Relative humidity

5 to 95% non-condensing

Power

+3.3V (±5%) 500mA typical

#### ■ Physical

Length

70mm

Width

30mm

### Ordering Information

#### AcroPack® Modules

[APA7-201E-LF](#)

48 TTL channels

[APA7-202E-LF](#)

24 EIA-485/422 channels

[APA7-203E-LF](#)

24 TTL & 12 EIA-485/422 channels

[APA7-204E-LF](#)

24 LVDS channels

*(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 AP module

[APCe7020E-LF](#)

PCIe AcroPack carrier, holds two AP modules

[APCe7040E-LF](#)

PCIe AcroPack carrier, holds four AP modules

[VPX4500E-LF](#)

3U VPX AcroPack carrier, holds three AP modules, air-cooled

[VPX4500-CC-LF](#)

3U VPX AcroPack carrier, holds three AP modules, conduction-cooled

[XMCAP2020-LF](#)

XMC AcroPack carrier; holds two AP modules, 2-slots out front

[XMCAP2021-LF](#)

XMC AcroPack carrier; holds two AP modules, 2-slots out rear

**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



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