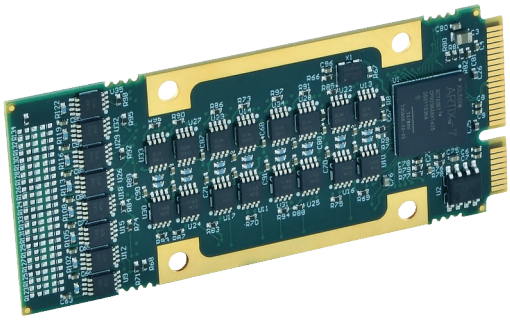
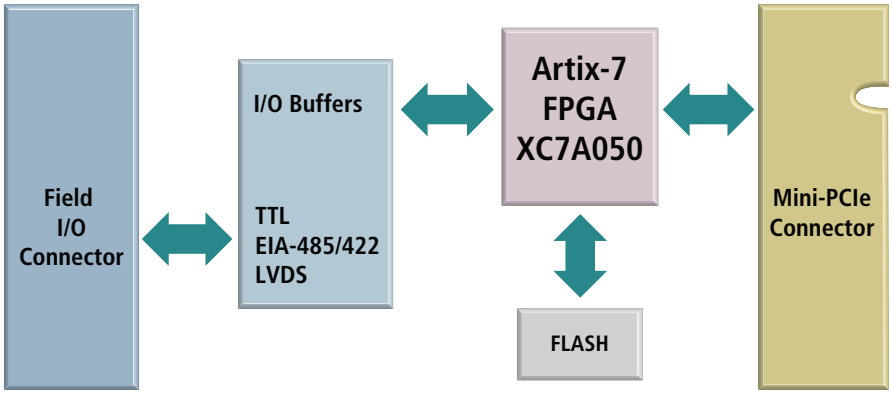
AcroPack® Modules

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

CE 2 YEAR WARRANTY RoHS Compliant





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

Description

Models

APA7-501E-LF: 48 TTL channels
APA7-502E-LF: 24 EIA-485/422 channels
APA7-503E-LF: 24 TTL and 12 EIA-485/422 channels
APA7-504E-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 APA7-500 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 APA7-500 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
- 52,160 logic cells
- 65,200 Flip flops
- 2,700 kb block RAM
- 120 DSP slices
- External LVTTL 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

ISO9001
AS9100
MADE IN USA

Performance Specifications

FPGA

FPGA device
Xilinx Artix-7 FPGA Model XC7A50T.

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 APA7-500 series module (see 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

APA7-501E-LF
48 TTL channels.

APA7-502E-LF
24 EIA-485/422 channels.

APA7-503E-LF
24 TTL & 12 EIA-485/422 channels.

APA7-504E-LF
24 LVDS channels.

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

Accessories

AP-CC-01
Conduction-cool kit.

APA7-EDK
Engineering design kit. *(One kit required)*

Carrier Cards

See Acromag.com/AcroPack-Carriers for a full list of AcroPack carrier cards.

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

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