

AD01429



## Applications

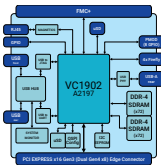
- High performance data capture and processing
- CPU offload acceleration
- Low latency networking and analytics
- AI Inference for Data Center or Edge applications
- High Performance Computing
- Industrial vision and control
- Lab-based system prototyping
- Rack level deployments

## Summary

The ADM-PA100 is an adaptable PCIe form factor Versal™ ACAP Data Processing Unit suitable for early development and rapid deployment of solutions based on Xilinx™ Versal ACAP VC1902 AI Core device.

The PCIe form factor is suitable for desktop, lab, rack mount and data center deployments in commercial temperature ranges. Additionally, the board can optionally be deployed stand-alone without any reliance on a host CPU. The FMC+ interface on the board allows off-chip support of the many standard and custom interfaces that can be supported by the Versal ACAP through the very wide range of Alpha Data and 3rd Party FMC IO adapters available. Flexible reference designs, allowing customers to access the full IO flexibility of the chip are provided for both the Vivado and Vitis tool chains.

The powerful VC1902 ACAP AI Core device provides a flexible device featuring 400 AI Engine VLIW processor cores capable of 133 INTB TOPs for Machine Learning or DSP applications, with support for scalar processing on on-chip 2 ARM® Cortex™ A72 Application class CPU cores and 2 ARM Cortex R5 real-time CPU core. These processors are complemented by a large area of 7nm Programmable Logic containing 900k LUTs, almost 2000 DSP tiles and 164Mb of very high bandwidth SRAM suitable for attaching extremely high performance and high efficiency offload acceleration to the ARM and AI Engine array processors. The device provides, and the board allows, access to a large number of configurable IO pins and Gigabit Transceiver ports which can connect to built-in hard-IP cores for 100G Multi-rate Ethernet, PCIe and DDR4, or can be controlled by custom IO logic in the programmable fabric supporting an incredibly wide range of communication standards and applications.



## Target Device

Xilinx Versal ACAP  
 VC1902-2MS (A2197)

LUTs = 899.8k DSPs = 1968  
 BRAM = 34Mb URAM = 130Mb  
 AI Engines = 400

400x AI Engines  
 2x ARM Cortex-A72 MPCore™  
 2x ARM Cortex-R5 MPCore

## Application Data Memory

2x 1G x 72 (8GiB) DDR4-3200

## Configuration Memory

x8 QSPI 2Gb storage Flash Memory

## Configuration Modes

From onboard Flash or uSD Card  
 Through USB board management (built-in JTAG)  
 MCAP Interface for Staged Configuration and Dynamic Function eXchange

## Deliverables

ADM-PA100 Board  
 One Year Warranty  
 One Year Technical Support

## Board Features

- FMC+ Interface
- GigE Interface
- 1x Firefly™ (x4) Interface
- System Monitor
- Heatsink with optional fan

## Host Interface

PCI Express Gen3 x16 (or Dual Gen4 x8)

## Communications Interfaces

1x Firefly 4x28Gbps - 10/25/40/100G Ethernet,  
 PCIe, Fiber Channel, Infiniband, Aurora

## Input/Output Interfaces

**FMC+ Interface**  
 24 High-Speed differential Serial Links (up to 28Gbps) and 80 diff pairs (or 160 single ended)  
 GPIO

## Other Interfaces

Gigabit Ethernet Interface (RJ45)  
 USB-A for Application use  
 Dual USB Configuration Sockets (front and back)  
 GPIO Interface (8 GPIO)  
 PMOD Interface (8 GPIO)

**Support**

ARM PS Targeted Reference Design, for host free development.  
 PCIe based hardware reference designs for Vivado™ with compatible  
 Windows and Linux driver and host API  
 Vitis® Board Platform and reference design for ARM PS and AIE  
 development.

**Board Format**

PCIe 3/4 Length, full height, Dual Slot, includes front panel  
 WxHxD = 267.2mm x 126.3mm x 39.9mm  
 Weight = PCB assembly - 210g; with fans heatsink and covers - 1150g

**Environmental Specification**

Cooling Option	Fan Fitted	Operating Temperatures		Storage Temperatures	
		Min	Max	Min	Max
Active	YES	0°C	55°C	-40°C	85°C
Passive	NO	0°C	55°C	-40°C	85°C

Operating Humidity : Up to 95% (non-condensing)

**EMC Standards**

FCC 47CFR Part 2  
 EN55022:2010 Equipment ClassB  
 EN55024:2010  
 EN60950-1:2006 (+A12:2011)

**Ordering Information**

**Order Code: ADM-PA100(s)(f)**

Option	Code	Description of Options
FPGA Configuration	s	/2MS = VC1902-2MS
Fan Fitted	f	BLANK = active (cooling fans) /NF = passive (no fans)
Note		Other options available. Please contact factory for details.

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