



## Applications

- High-Performance Network Accelerator
- Data Center/Data Processor
- High Performance Computing (HPC)
- System Modelling
- Market Analysis

## Board Features

- 1x OpenCAPI Interface
- 1x QSFP-DD Cages
- Shrouded heatsink with passive and fan cooling options

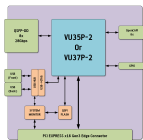
## FPGA Features

- 2x 4GB HBM Gen2 memory (32 AXI Ports provide 460GB/s Access Bandwidth)
- 3x 100G Ethernet MACs (incl. KR4 RS-FEC)
- 3x 150G Interlaken cores
- 2x PCI Express x16 Gen3 / x8 Gen4 cores

## Summary

The ADM-PCIE-9H3 is a high-performance FPGA processing card intended for data center applications using Virtex UltraScale+ High Bandwidth Memory FPGAs from Xilinx.

The ADM-PCIE-9H3 utilises the Xilinx Virtex Ultrascale Plus FPGA family that includes on substrate High Bandwidth Memory (HBM Gen2). This provides exceptional memory Read/Write performance while reducing the overall power consumption of the board by negating the need for external SDRAM devices. There are also a number of high speed interface options available including 100G Ethernet MACs and OpenCAPI connectivity, to make the most of these interfaces the ADM-PCIE-9H3 is fitted with a QSFP-DD Cage (8x28Gbps lanes) and one OpenCAPI interface for ultra low latency communications.



## Target Device

Xilinx Virtex UltraScale Plus: XCVU33P-2E (FSVH2104)

LUTs = 440k  
FFs = 879k  
DSPs = 2880  
BRAM = 23.6Mb  
URAM = 90.0Mb

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## Application Data Memory

2x on FPGA Substrate 4GB High Bandwidth Memory (HBM) - up to 460GB/s (over 32 AXI Interfaces)

## Other User Memory

2kb I2C EEPROM - Non-volatile data storage for the user design (i.e. storing MAC addresses)

## FPGA Configuration Memory

QSPI 512Mbit Flash Memory  
Configured as 2 x 256Mbit zones

## FPGA Configuration Modes

From onboard Flash  
Through USB board management (built-in JTAG)  
Partial Reconfiguration (via MCAP) Over PCI Express

## Deliverables

ADM-PCIE-9H3 Board  
One Year Warranty  
One Year Technical Support

## Host Interface

1x PCI Express Gen3 x16 or 1x/2x\* PCI Express Gen4 x8 or OpenCAPI

## Board Format

1/2 Length low profile x16 PCIe form Factor  
WxHxD = 19.7mm x 80.1mm x 181.5mm  
Weight = TBCg

## Communications Interfaces

1x QSFP-DD 8x28Gbps - 10/25/40/100G Ethernet, PCIe, Fiber Channel, Infiniband, Aurora  
1x Ultraport SlimSAS 8x25/28Gbps - OpenCAPI, 10/25/40/100G Ethernet, PCIe, Fiber Channel, Infiniband, Aurora

## Input/Output Interfaces

### Other Interfaces

Micro USB for JTAG support (FPGA programming and debug) and system monitor

## Board Management

The ADM-PCIE-9H3 houses a system monitoring chip which is able to provide real-time temperature, voltage and current readings of the system, as well as reconfigure programmable clocks and much more. The system monitor is implemented using an Atmel AVR microcontroller, and can be accessed directly through the USB interface via the front panel, the UART connection to the target FPGA or through the SMBUS interface on the card's PCI Express edge connector. IPMI can also be used to communicate with the system monitor, allowing for remote communication and management with the ADM-PCIE-9H3.

**Support**

In development an optional integrated Board Support Package (BSP) including FPGA example designs, plug and play drivers and API.

**Environmental Specification****Temperature Ranges**

Operating Temperature Range : 0°C to +55°C

Storage Temperature Range : -40°C to +85°C

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

**EMC Standards**

FCC 47CFR Part 2

EN55022 Equipment ClassB

**RoHS Directive 2011/65/EU**

50581: 2012

**Ordering Information****Order Code: ADM-PCIE-9H3(S)**

Option	Code	Description of Options
FPGA Speed	S	Blank = XCVU33P-2E Fitted, /3E = XCVU33P-3E Fitted

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