# ALPHA DATA
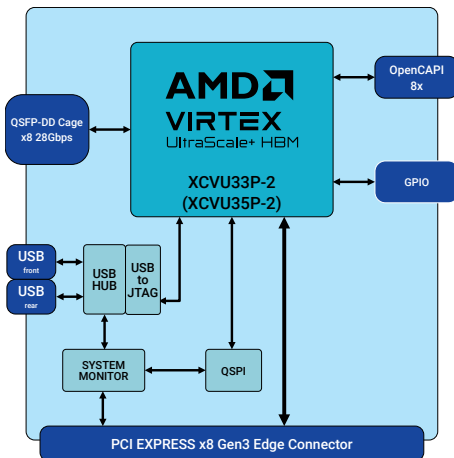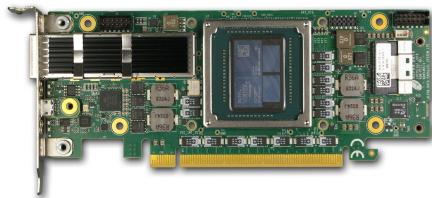
AD01365





## Applications

- High-Performance Network Accelerator
- In-Network Compute
- 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

## 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 AMD.

The ADM-PCIE-9H3 utilises the AMD 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

AMD Virtex UltraScale Plus
XCVU33P-2E (XCVU35P-2E) (FSVH2104)

LUTs = 440k (872k) FFs = 879k (1743k)
DSPs = 2880 (5952)
BRAM = 23.6Mb (47.3Mb) URAM = 90.0Mb (180.0Mb)

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

## Application Data Memory

2x 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)

## Configuration Memory

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

## 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

## 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.

# ALPHA DATA

www.alpha-data.com

**UK Office**
Address:   Suite L4A, 160 Dundee Street, Edinburgh, EH11 1DQ, UK
Telephone: +44 131 558 2600
Fax:         +44 131 558 2700
email:      sales@alpha-data.com

**USA Office**
10822 West Toller Drive, Suite 250
Littleton, CO 80127
(303) 954 8768
(866) 820 9956 - toll free
sales@alpha-data.com

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## Support

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

## Board Format

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

### 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 Select | S | blank = XCVU33P-2E Fitted,<br>/VU33P-3 = XCVU33P-3E Fitted,<br>/VU35P-2 = XCVU35P-2E Fitted |

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