AD01473

Applications

- Low Latency Trading
- In-Network Compute
- High-Frequency Trading
- High-speed Communications Hub

Board Features

- Rack-mount 1U Chassis
- Highly optimised signal tracking for ultra low-latency QSFP-DD Communications
- 32x SFP+ cages
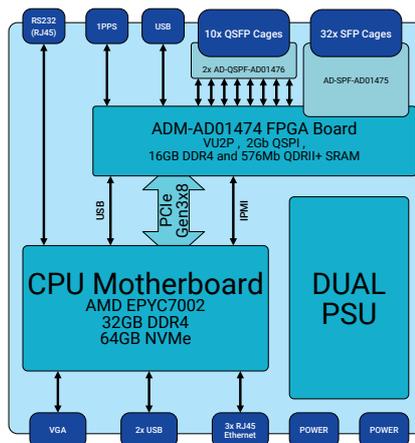- 10x QSFP Cages
- Integrated ADM EPYC CPU System

Summary

The ADA-R9100 is a 1U 19 Rack Mount appliance based around the AMD Ultrascale+ VU2P Ultra Low Latency FPGA. This appliance is designed to provide the lowest latency access to the highest number of ultra-low latency GTF transceivers that are the unique feature of the VU2P device.

32 Extremely low latency channels are provided via SFP+ connections on the front panel, with trace delays of less than 1ns. The other 40 low latency channels, have trace delays of less than 3ns and connect to 10 QSFP28 connections on the front panel.

Multiple clock jitter attenuators are available on appliance FPGA board to allow source synchronous clocking of GTF receivers. The FPGA board also features 16GB DDR4 SODIMM and 576Mb of QDRII+ SRAM.

The appliance is data center deployment ready, and can be remotely managed using the embedded ASRockRack ROME4ID-2T motherboard. This platform features an ATSPEED BMC that allows remote management and power cycling of the system. The CPU sub-system features an AMD EPYC7002 series processor, 32GB DDR4 and 64GB NVMe pre-installed with Ubuntu Linux OS. This system is powerful enough to run the AMD Vivado toolset for advanced remote debug and development. Additional comprehensive system monitoring of the complete appliance is available in standby and fully powered up via Ethernet, IPMI and USB functionality. The CPU sub-system can connect to the FPGA via PCIe Gen3x8.

The appliance features a dual redundant power supply, for server class reliability

Block Diagram

RS232 (RJ45)	1PPS	USB	10x QSFP Cages		32x SFP Cages
			2x AD-QSPF-AD01476		AD-SPF-AD01475

ADM-AD01474 FPGA Board
VU2P , 2Gb QSPI ,
16GB DDR4 and 576Mb QDRII+ SRAM

USB — PCIe Gen3x8 — IPMI

CPU Motherboard
AMD EPYC7002
32GB DDR4
64GB NVMe

DUAL PSU

VGA	2x USB	3x RJ45 Ethernet	POWER	POWER

Target Device

AMD Virtex UltraScale Plus
XCVU2P-3 (FSVJ2104)

LUTs = 787 FFs = 1722 DSPs = 1680
BRAM = 76Mb URAM = 180Mb

72x Accessible Ultra-Low Latency GTF transceivers
1x PCI Express x8 Gen4 core

Configuration Memory

QSPI 2GBit Flash Memory

Configuration Modes

Deliverables

ADA-R9100 Board
One Year Warranty
One Year Technical Support

Host Interface

PCI Express Gen4 x8

Communications Interfaces

32x SFP+ 1x28Gbps - For 10/25G Ethernet

10x QSFP28 4x28Gbps - For 10/25/40/100G Ethernet

Input/Output Interfaces

Chassis Ethernet
3x 1/10G RJ45 Ethernet for CPU Sub-system

Other Interfaces

USB (front socket) board management (built-in JTAG)

Isolated PPS Timing Input

Board Management

The ADA-R9100 houses an ASRockRack ROME4ID-2T server class embedded motherboard for local application execution and chassis management. This features a powerful AMD EPYC7002 series processor, 32GB DDR4 and 64GB NVMe pre-installed with Ubuntu Linux OS. It also features an ATSPEED BMC to allow remote management and power cycling of the system, as well as remote system monitoring of the FPGA card and front panel modules and cables even when powered down to standby mode.

Support

TBC

Board Format

1U 19 inch Rack Mount

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 Class A

Ordering Information
Order Code: ADA-R9100

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