

Aquila O-Band Coherent-Lite DSP for 800G/1.6T Optical Transceiver

Low-power, low-latency coherent-lite DSP for inside data center applications up to 20km
P/N MV-CD242

Overview

The Marvell Aquila DSP is industry's first coherent-lite DSP optimized for low-dispersion O-band fixed wavelength lasers.

The Aquila DSP is optimized for low-power and low-latency inside data center application, particularly for mid-range fabric and campus interconnects spanning 2 to 20 kilometers.

The Aquila coherent-lite DSP provides an energy- and performance-optimized solution that bridges the gap between traditional intensity modulation-direct detection (IM-DD) solutions and performance and long distance focused C-band

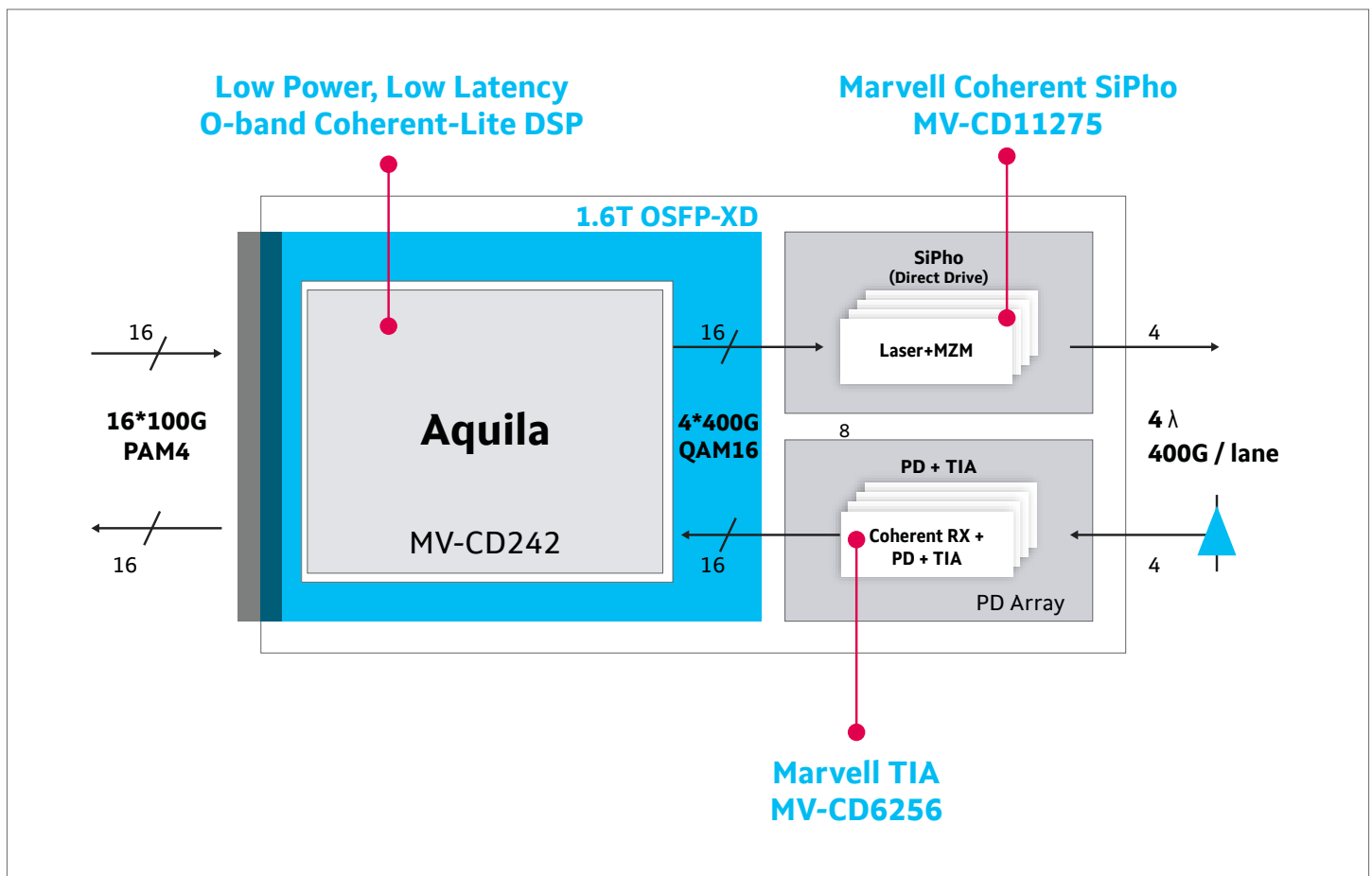
coherent systems, providing an efficient solution tailored for AI-driven data centers and cloud-based infrastructure.

The Aquila DSP features 100Gbps/lane PAM4 host electrical interfaces, and 400Gbps/lane 16-QAM optical interface with integrated and standard drivers.

The high swing drive capabilities of the DSP further simplify manufacturing complexity while saving power and cost.

The DSP also integrates advanced diagnostic features.

Block Diagram



Key Features

Features	Benefits
O-band coherent-lite DSP	• Low power and low-latency optimized with O-band optics
100 Gbps PAM4 host interface	• Suitable for mainstream Switch/NIC hardware
Integrated low-power, high-swing driver	• Reduces system power/cost
Multiple forward error correction (FEC) support	• Further enhances link campus
Comprehensive test and debug capability	• Simplifies transceiver module debug/production/deployment

Target Applications

- High-bandwidth 400G/lane fabric and campus optical link
- 2-20km reach
- 800G/1.6T optical module



To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies over 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

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