Equinox 7: Aries 7 Smart Retimer CEM Add-In-Card

Product Brief

Astera Labs (NASDAQ: ALAB) provides rack-scale AI infrastructure through purpose-built connectivity solutions. By collaborating with hyperscalers and ecosystem partners, Astera Labs enables organizations to unlock the full potential of modern AI. Astera Labs' Intelligent Connectivity Platform integrates CXL®, Ethernet, NVLink Fusion, PCIe®, and UALink™ semiconductor-based technologies with the company's COSMOS software suite to unify diverse components into cohesive, flexible systems that deliver end-to-end scale-up, and scale-out connectivity. The company's custom connectivity solutions business complements its standards-based portfolio, enabling customers to deploy tailored architectures to meet their unique infrastructure requirements. Discover more at **www.asteralabs.com**

1. Introduction

The Astera Labs Aries PCI Express® 7.0 / CXL™ CEM add-in card (Equinox 7) is a PCIe Gen 7 x16 CEM-to-CEM system validation board for evaluating the Aries 7 PT7162L Smart Retimer. It is a half-length, full-height, single-slot PCIe AIC with an x16 PCIe Gen 7 CEM interface and an x16 Gen 7 connector for endpoint connection.

The board provides SMBus and Comet2-based SPI flash/EEPROM programming and debug access. Aries 7 diagnostics are supported through the C and Python SDKs, and host management is available through I3C or I2C.

2. Technical Information

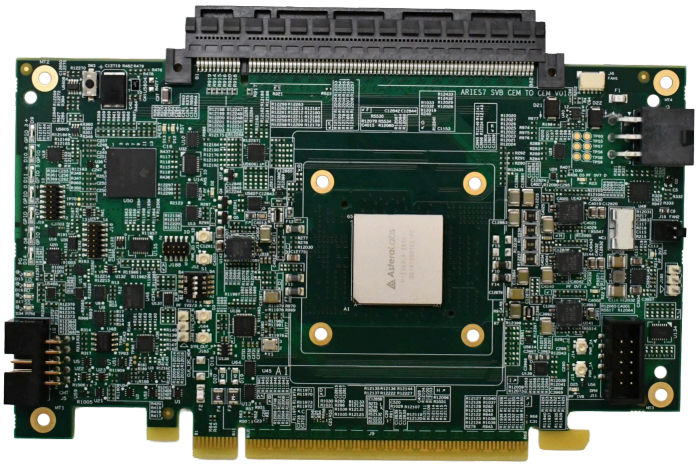
Feature	Specification
Part Number	EQUINOX7-REVA
Form Factor	Standard full-height, half-length, single-slot-width PCIe AIC
Card Physical Dimension	167.64 mm (L) × 100 mm (H) × 14.7 mm (W)
PCIe AIC Standard PCB Thickness	0.063 in ± 0.008 in (1.6 mm ± 0.2 mm)
Retimer	Aries PCIe 7.0 / CXL Retimer
Connectors	PCIe CEM 7.0 x16 edge finger and PCIe Gen 7 x16 CEM socket/connector
LED Indicators	Yellow: Retimer reset, PCIe fundamental reset Orange: Retimer heartbeat, link status Green: Power good, firmware load done
Port Bifurcation Options	1x16, 2x8, 4x4, 8x2; Additional configurations may be firmware-dependent
Debug/Control Interfaces	Comet2 header with SMBus/I²C access, SPI flash programming, EEPROM programming, and firmware/debug access
Power Input	12 V from PCIe edge and 12 V auxiliary input through a 2×3 PCIe auxiliary connector
Clocking	Common Clock and Separate Clock support with local/host reference-clock selection
Telemetry	Voltage, current, power, temperature, GPIO, reset, and clock telemetry

AsteraLabs, Inc. reserves the right to update this product brief without notice. For detailed information on specific features, please refer to the datasheet.

3. Applications

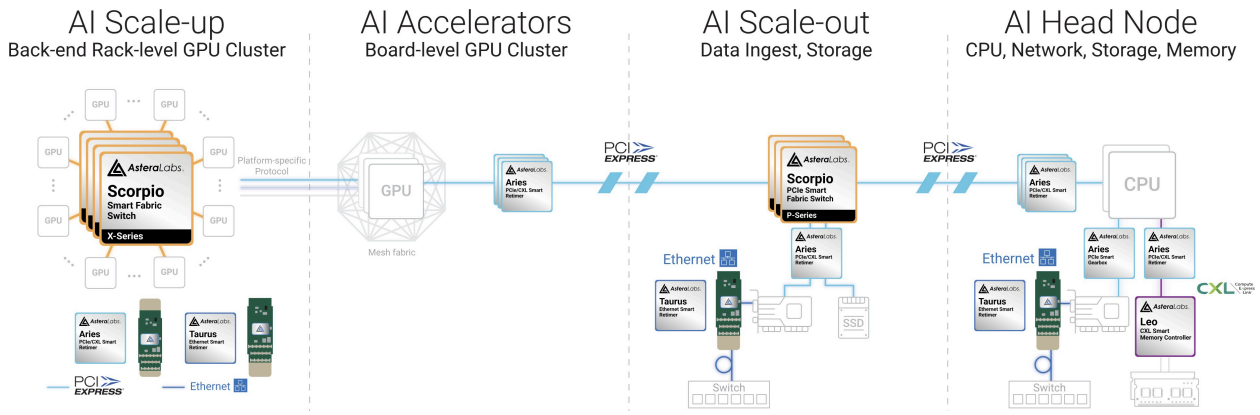
- Evaluation of the Aries PCIe x16 Smart Retimer for server, storage, JBOG, AI/ML, and other PCIe-based systems
- Retimer add-in card to extend PCIe signal reach and accelerate system deployment
- Plug-and-play implementation for GPU-accelerated servers, NIC extension, PCIe switches, and other platforms equipped with a standard PCIe CEM slot

Figure 3-1 Equinox 7 Add-In Card



4. AI Server Platform Application

The Aries PCIe®/CXL® Smart DSP Retimer portfolio provides robust PCIe connectivity in AI server platforms with complex topologies, densely packed signals that travel longer distances, and an increasing number of connectors that are utilized to expand configuration optionality.



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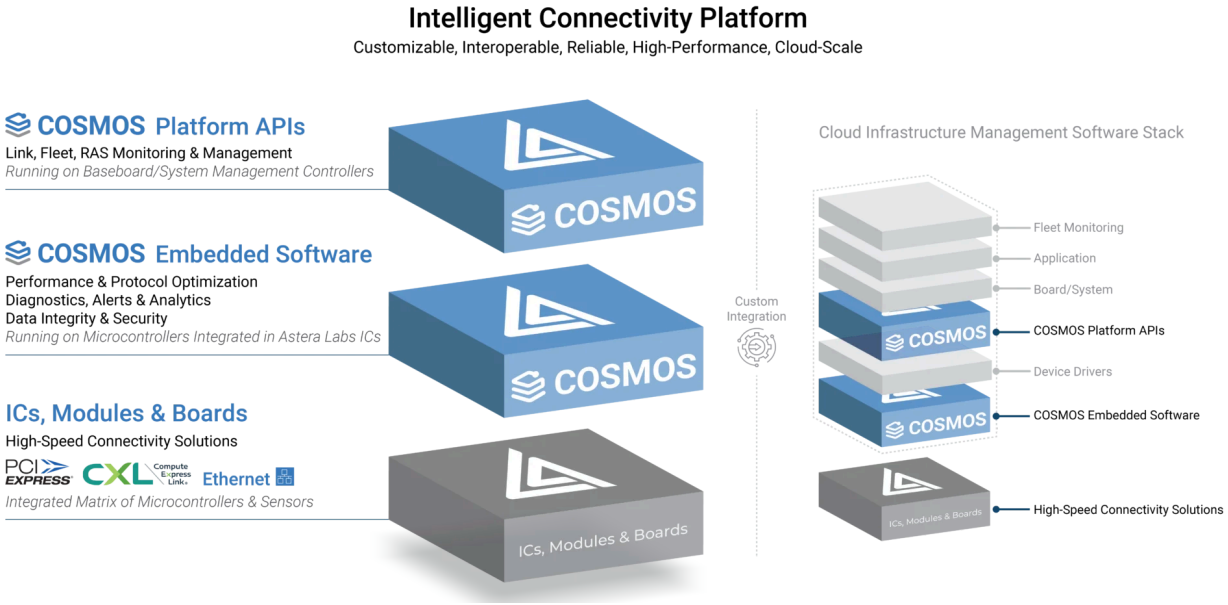
5. Astera Labs' Intelligent Connectivity Platform

The Aries PCIe®/CXL® Smart Retimer portfolio is an integral part of Astera Labs' Intelligent Connectivity Platform. In addition to Aries, there are multiple PCIe, CXL and Ethernet ICs, Modules & Boards that are at the foundation of the platform. Astera Labs' COnnectivity System Management and Optimization Software (COSMOS) suite provides extensive Link, Fleet and RAS Management features and diagnostics. Through the combination of software and hardware, the Intelligent Connectivity Platform enables a smart connectivity backbone that is both scalable and customizable for AI and cloud infrastructure.



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